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The NATIONAL HORTICULTURAL MAGAZINE



JOURNAL OF THE AMERICAN HORTICULTURAL SOCIETY

APRIL, 1933

The American Horticultural Society

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March 1, 1933

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THE NATIONAL HORTICULTURAL MAGAZINE

Published by and for the Society

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At the Annual Meeting of the Society there was announced the formation of a Narcissus and Tulip Committee, organized to undertake the advancement of the interest in the two important plant groups. The preliminary work will consist of the study of tulip species and the preparation of special studies on the modern narcissus. Inquiries should be addressed to the Chairman at the Editorial Office, 116 Chestnut Street, Takoma Park, D. C. The personnel of the Committee follows:

Mr. B. Y. Morrison, *Chairman*, Miss Mary Judson Averett, Mr. Leonard Barron, Miss Mary McD. Beirne, Mrs. Paul M. Davis, Mrs. F. Stuart Foote, Mrs. Mortimer J. Fox, Dr. David Griffiths, Mrs. R. Howard Hall, Mrs. Floyd Harris, Professor Frank McWhorter, Mr. Sydney B. Mitchell, Mr. John C. Wister, Mr. Richardson Wright.

At the same time was announced the formation of a Rhododendron Committee, under the temporary Chairmanship of Dr. Clement G. Bowers. A more complete report of the personnel of the permanent committee will follow shortly.

Preparations are being made for the formation of special committees to promote the interests of other plants, notably lilies and rock garden plants.

The American Horticultural Society

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TO ALL MEMBERS

BY the time this magazine is in your hands it is possible that the first flowers of the narcissus and tulips will have passed. If they have not, will you cooperate with the members of the committee that is named on page 2 of cover and keep a record for us of the dates of their blooming? It will be of the greatest interest to all of us, if we may have this sort of information for our files from as many of the members as possible. It will also be of the greatest value to us if you will make a special report to us of the general health and behaviour of the varieties that you grow. There seem to be several impressions among our members that certain facts are indeed facts, but this can be confirmed only by wider observations. In sending in comment, will you also tell something of the kind of soil in which you grow your plants, a brief comment on the "usual" spring weather and the approximate age of the planting?

The same data are asked for in regard to tulip species. These charming plants have not received all the attention they deserve and are too often overshadowed by the more spectacular beauties of the garden strains. This is certainly not the case in such amazingly brilliant flowers as *Tulipa Fosteriana* with its huge blooms and unbelievably scarlet color.

Part of your committee is already at work on these plants and other members will begin this autumn. Will you send in such data as you have? At the present time pictures are being taken of all the species and records have already been made of the bulbs. It is hoped that in the returns from a collecting trip now being carried out in Persia, some additional material will be made available for report. In any case the project will not be ready for reporting until 1934, but some preliminary notes can be given in October, 1933. In the end it is hoped that we can publish for you a report that will make it unnecessary for you to do all the reading of miscellaneous texts that you must now read, if you would find out about these delectable plants.

If you are growing azaleas and rhododendron, will you remember also that the society is acutely interested in gathering data concerning these plants and their usefulness in various parts of the

country? The Rhododendron Committee is not yet fully formed but is under way and we are able to announce that Mr. S. A. Everett will become the *Permanent* Chairman of the Committee. The full personnel will be announced in the July issue of the magazine.

Since the members of the society have given such excellent support to all the requests of those who have to do with the assembling of the material, it seems to us that we have only to ask and we receive your help.

No one realizes more acutely than we that the present year is a year of necessities, but we make bold to urge that you feel your relation to this particular project as one of the essential matters of your life. Surely no special persuasion is needed to show the liberation of the spirit that can be found in the garden, no pleading will be needed to prove that life can be enriched in an indefinite extent by the opening of one's eyes to life in the garden with its related contacts in art, history and geography. This may sound serious, too serious perhaps; but life itself is serious and in this time of change for our national life with the curious alterations in attitude and approach that may appear, those of us who garden must hold fast to that which we have found good.

Will you write to us and for us? Tell us what you are doing and why. That why is very important. Store up for us your information in regard to a variety of things. Make a note that in addition to the plants already mentioned we are anxious to have as much data as possible about rock garden plants in all parts of the country, native plants with attractive growth and bloom, pentstemons in particular, all lilies, all iris species, ivies and ivy forms (these to be sent to Mr. Bates), dianthus and campanulas. As these accumulate we shall be able to return to you a very complete summary of all the material that has come in, under one final cover, with illustrations of permanent value.

It may be unbecoming to boast, even discreetly, but you will be interested to know that your magazine is becoming more popular as time goes on. There are still those who believe it one iota too difficult, but there are more and more who find it what they have long desired. You will be glad to know that it is making some fame for its illustrations and that libraries in all parts of the United States are making it part of their bound collection. If one were permitted to quote to you the messages of approval that come in from horticulturists in this country and some from abroad you would realize why all of us are so anxious to contribute our time and wit to this common project. Will you not feel that it is yours too?

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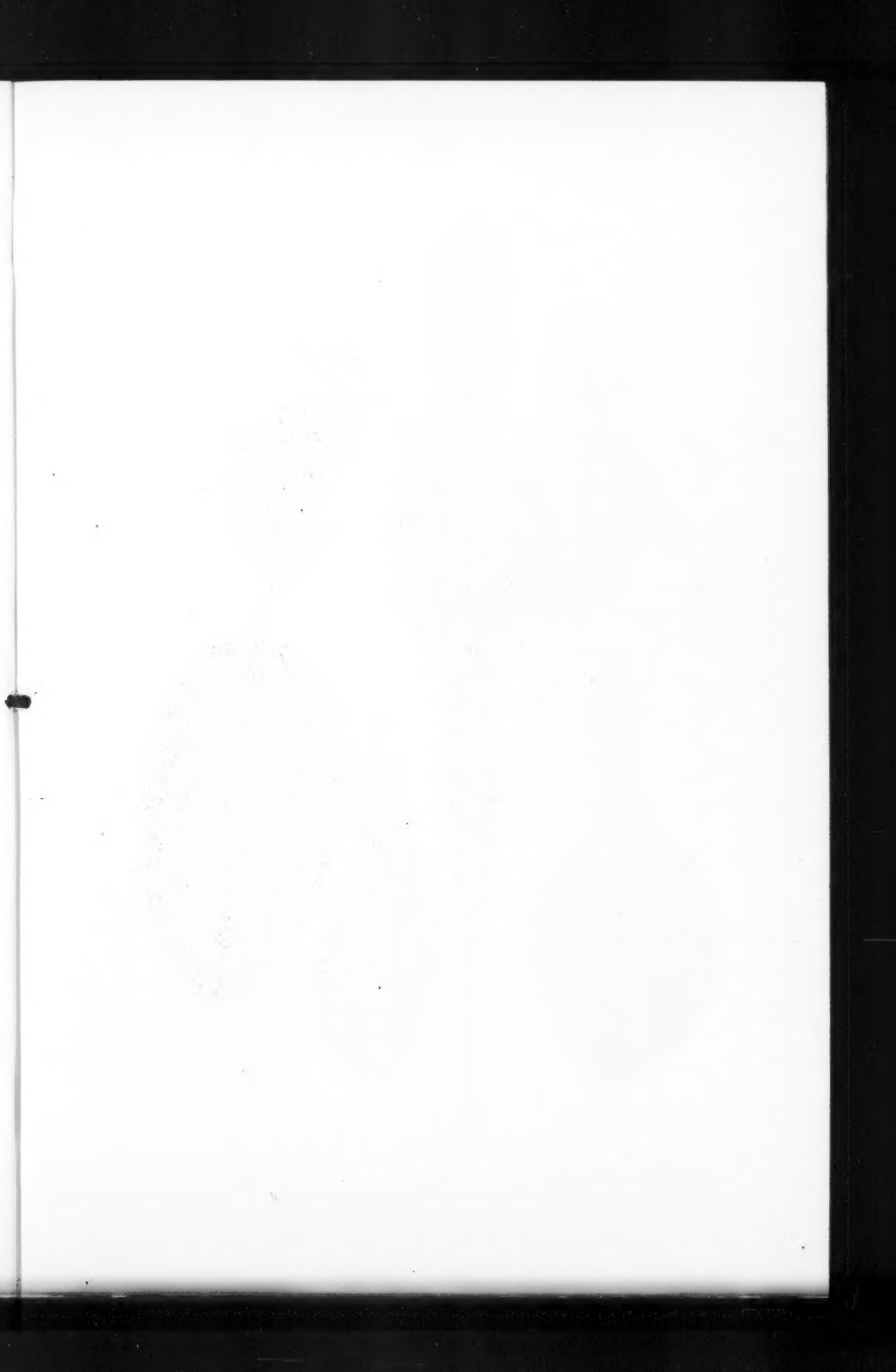
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IRIS CHRYSAEOLA

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American Iris Society cooperating.*

Iris Chrysophoenicia

By E. J. ALEXANDER

One of the most outstanding of the newly discovered Louisiana Irises is *Iris chrysophoenicia*, as it is at once one of the easiest to grow, a good bloomer and a strikingly colored one. Its velvety, deep red-purple or plum-colored flowers with their prominent blotches of yellow are outstanding at a good distance, well-formed and full. In its native swamps it reaches a height of four and a half to five feet, but so far in cultivation it has reached only three and a half to four feet, but that is a sufficient height to set off its beauty. It was first found in 1925 near New Orleans, where the colony first seen still grows along the edge of a half-filled in bayou just east of the city. This colony has been two-thirds destroyed by building developments, but about twenty square feet of it remains to be admired. Since then a number of other colonies have been found in various localities in the lower Mississippi Delta. There are several color variations of this species worth calling attention to. One of them is a clear violet with a pale lemon-colored blotch, another a rosy mauve with a light yellow blotch, a third lilac with a yellow blotch, a fourth pale violet or deep lavender with a pale yellow blotch, and last and most beautiful of all a bronze-red with a brilliant golden yellow blotch.

Like all the Louisiana species, this iris is a gross feeder, doing its best in rich, well prepared soil with plenty of peat and at least once a year a working in of manure. The plants should be kept quite dry, however, and well-drained in winter, as, even though in their native haunts they grow in water often knee-deep, in this more north-

ern climate they object to having ice around their roots in winter. A covering of hay is also beneficial in winter, but this must be removed as soon as the ground thaws in the spring.

The normal blooming time is in mid-June, and if the plants are to be divided, it should be done as soon after flowering as possible, otherwise there will be no bloom the following year.

Since the rhizomes of these plants are extensively creeping, plenty of space should be given them, or they should be dug up, given new soil and replanted every two or three years.

The flowers of the typical form, borne on straight, stout stems, average four to five inches across when well grown. The falls are a deep red-purple with a prominent radial blotch of yellow at the base, this yellow streaking irregularly into the blade. The haft is greenish-yellow within, yellow-green without. The standards are a slightly redder shade of red-purple than the falls. The crests are the same color as the standards, the center of the flower having a smoky flush over its light red-purple ground color, and the style branches winged and keeled with white. The yellow base underlying the color of this flower indicates that we may hope to some day discover a creamy yellow albino, which would indeed be a welcome addition.

N. Y. BOTANICAL GARDEN.

Dr. Small and Mr. Alexander have arranged irises in groups according to their crests and published this classification in "Botanical Interpretation of the Iridaceous Plants of the Gulf States," which is No. 327 of the Con-

tributions from the New York Botanical Garden and was issued in 1931. In this classification there are thirteen classes of which the two first, Fulvae and Ecristatae are without crests, the third group, Bicristatae has the crest notched at the tip so it forms two parts or else the division may be deeply cleft almost to the base of the blade. In the fourth group which has been named Unicristatae, the crest is truly solitary with no rudimentary laterals present. To horticulturalists the best known member of this latter group is *Iris vinicolor* but *I. violipurpurea* and *I. moricolor* are included. In the fifth group, Lancicristatae, are placed those irises with crest laterals well developed each side of the center crest and with the crest, a raised ridge. These laterals do not radiate out towards the edge of the fall but run always parallel with the median. Here we find *I. regalis*, *I. oenantha* and *I. fourchiana*. In the sixth group,

Tricristatae, the crest laterals radiate towards the edge of the fall and *I. Marplei* and *I. atroenantha* are placed here. The seventh group of Coroncristatae contains those species that have crest laterals radiating towards the edge or they may be very short, forming altogether a triangular blotch. Here we find *I. chrysaëola* and *I. chrysophoenicia*. In the eighth group, entitled Radicristatae, there is a white zone around the crest and these irises are on a white base which none of those in the preceding groups are. The Floridian species in this group (there are some) have six-ribbed capsules while those from other parts have six-lobed capsules. *Iris giganticaerulea*, *I. albispiritus*, *I. savannarum*, *I. elephantina* all belong here. The remaining five groups are named respectively Hexagonae, Prismaticae, Versicolores, Tripetalae and Pseudacori.

E. A. S. PECKHAM.

Seed-Sowing

By F. W. MILLARD, V. M. H.

This article is penned with especial reference to the seeds of alpine plants, although I hope what I have to say may prove useful to those readers who have to deal with other seeds. The raising of alpine plants from seeds is no easy matter, it being so much more simple in many instances to stick a cutting in sand and root it, but, as is well known, continued propagation in that way by no means contributes to the strength of the subject. Seedlings possess greater stamina, and when plants collected from thousands of miles apart are brought into close association in the garden there is every

possibility of obtaining lovely hybrids. In addition, by persistently producing generations of plants from seed saved in your own garden, a difficult wild plant becomes more amenable to cultivation.

Very few alpine seeds, except those of the more vigorous and common plants, may be sown in the open ground with much hope of success; I have found it advisable to attempt nothing but pot culture under the protection of glass, with no artificial heat. If advantage is taken of heat you may induce seedlings to progress more rapidly, and apparently you produce

a better plant, but when it comes to be put in the open it is certain to stagnate. Content yourself with sowing and growing the seedlings naturally, if more slowly, and better success will be yours in the end.

I use as far as I can earthenware pots and pans for alpine seeds, these being far superior for the purpose to other receptacles. Crocks, or pieces of broken pots, are placed over each drainage hole, and over these about half-an-inch of smaller pieces. Covering these a thin layer of moss is imposed, sphagnum for preference. This moss serves a double purpose, as it prevents soil choking the drainage, and retains moisture. Should neglect by any chance lead to the pan of soil drying out, seedlings whose roots have reached the damp moss will not suffer. Moss is far better than any other material.

I am decidedly adverse to using sterilized soil for alpine, for some very necessary part of the soil (it may be bacteria) appears to be destroyed by sterilization. Seedlings in it do not grow as freely as they should, and I would much rather run the risk of a few weeds and insects. If the soil is pressed through a sieve having a mesh of one-eighth of an inch there is little chance of any injurious insects passing, and as an extra precaution the soil may be spread thinly on a bench and well hammered with a mallet. Nothing in the way of insects should escape this drastic treatment.

My favorite medium is three parts loam, two parts leafmold, and one part sharp sand, adding peat for woodland subjects and more sand for those not in love with too much moisture. These preparations should suit almost anything. Fill the pan to within half-an-inch of the rim and press the soil very firmly, hammering it down with the bottom of a pot, for seedlings pre-

fer a firm basis. It is very essential that the soil should be perfectly level, for unevenness leads to the higher portions drying out and the lower being too moist. The seedlings under such conditions germinate and grow very unevenly. A perfectly flat surface is also necessary, or some of the seeds will lie deeper than others and that will tend to uneven and irregular germination.

Always sow evenly and thinly, this being most important, as crowded seedlings cannot progress. The distance apart should be governed by the amount of top growth various seedlings develop before being ready for pricking out. Very small seeds are difficult to distribute evenly, because they are hardly visible on the surface of the soil. This may be overcome by sieving over the surface before sowing a slight covering of fine white sand. Against this the finest seed may be seen. This method offers a further advantage, for if the sand is afterwards obliterated by sieving fine soil over it the small seeds are then sufficiently covered. Finally press the surface evenly and flat. Larger seeds must, of course, be covered more deeply.

When sowing has been completed, the pans are immersed in water to the rims, lifted out directly water shows through, and if my method is followed further watering is unlikely to be necessary till the seed has germinated and spraying overhead is possible and safe. I cut asbestos sheets half-an-inch wider than the pan to be covered, and place these on top; they conserve the moisture and assist to retain a more even temperature. Every third day the pans are inspected, and the asbestos plates removed immediately growth is detected. The asbestos is now replaced by glass, which is kept in position for a few days till

all the seedlings are through, when it is removed. This all tends to promote very even germination. The pans are then put in slight shade till the seedlings are able to endure full sun. The asbestos covering saves much space in glass frames and houses, as till the seeds start the pans may be stacked on each other to almost any height.

Care should be observed to keep the pans uniformly moist as the seedlings grow, the conditions as regards this being controlled by the nature of the plants and habitats from whence they came. As a rule pricking out should be undertaken when the first leaves, other than the seed leaves, have developed, and the root-system of each seedling should be injured during removal as little as possible. Press each in firmly, using same compost from which they came.

Clean pots and pans are a necessity for sowing; they should be washed thoroughly and if it can be done immersed in boiling water to destroy all fungi. Cleanliness in the garden is always worth while and especially under glass.

Finally, a few suggestions as to when to sow, because this is a matter where it is hardly wise to follow

nature too closely. She sows her seeds as soon as they are ripe, which generally occurs in the autumn; therefore, the small seedlings have to face the most inclement period of the year. However, nature can afford to do this, because she sows prodigally, and it is all to the good that the larger number of seedlings succumb; otherwise they would be too crowded. The gardener cannot afford such wholesale losses, and therefore he is compelled to sow at a time when the seedlings will meet with a more congenial climate. Fortunately, most seeds have sufficient vitality to enable them to endure delayed sowing without serious deterioration as regards fertility. The following rule is a very good one to observe. Sow in autumn those seeds which quickly germinate, so that the seedlings will have time to become strong enough to endure winter; also those seeds the germination of which may be depended upon not to take place till the spring. Other seeds should be stored under cool and equable conditions till spring is actually here.

Camla Gardens,
Felbridge, East Grinstead,
England.



The Rock Garden

No spring issue would be complete without some illustrations of rock gardens and although there are articles elsewhere in the issue that tell of rock garden building and rock garden plants, the following illustrations may serve as examples of rock garden work.

The illustration above and the picture on the following page are from the garden of Mrs. Azro Fellows, Belvidere, Ill., and show excellently the transition from a more general garden treatment into the specialized rock garden, which here is of a gentle elevation with broad masses of flow-

ering plants and low outcroppings of rocks. The illustration on page 82, sent in by Mr. P. J. van Melle, Poughkeepsie, N. Y., shows a more elaborate construction over a higher bank with a very careful balance between the masses of rock and the masses of flowers. The illustrations on pages 83 and 84 show examples of that even more difficult task, the planting of natural stone crevices in such a fashion that the result is plausible and the plants themselves are happy in their situation. In these instances the plants show a particularly happy contrast in color values and in habit.



Entrance to the Rock Garden



Steenenson & Van Vlack

A Well-Planted Bank

Carpenter Laboratories, Hopewell Junction, N. Y.

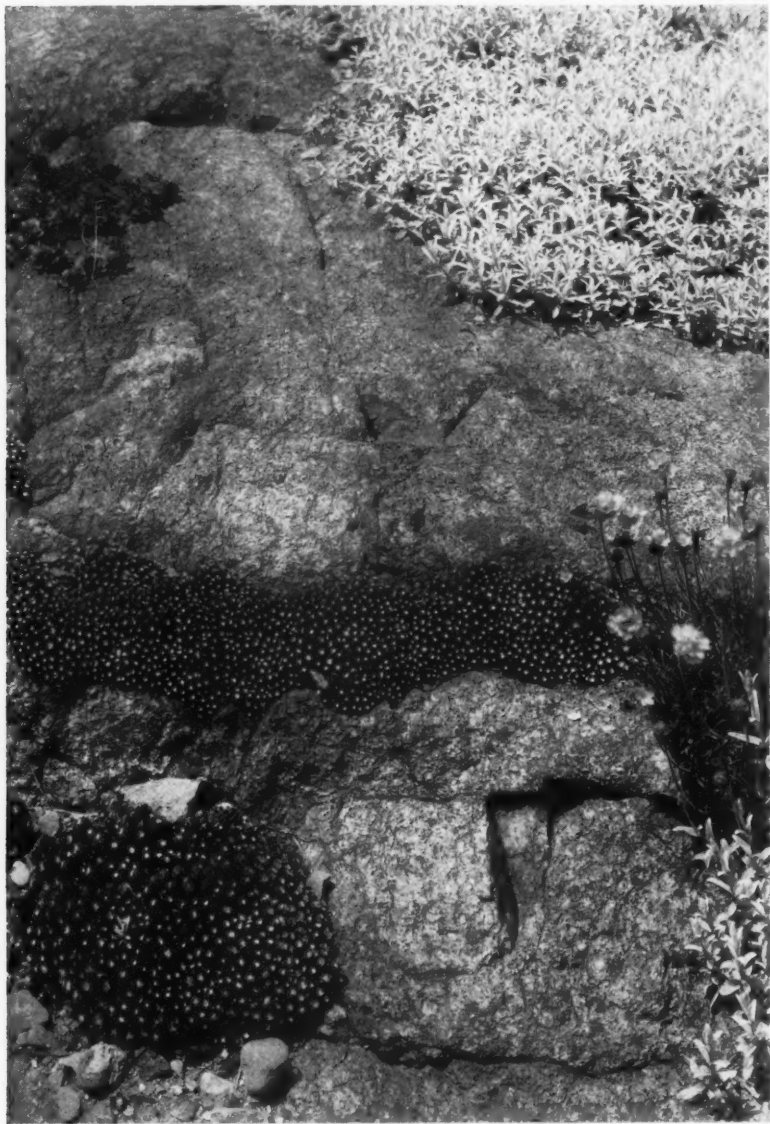
Foreground center, Veronica armena; Lower right, Arabis procurrens



Stenson & Van Vlack

Sedums and Sempervivum Lageri
in natural crevices

Estate of Mr. and Mrs. L. S. Haskin, Glenham, N. Y.



Steensohn & Van Vlack

*Armeria and Cerastium make a good foil
for the compact colonies of Sempervivums*

Climbing Roses

BY J. HORACE MCFARLAND

At the outset let me disclaim any intention of either a botanical or a complete discussion of that extraordinarily useful group of roses falling generally under the designation of the heading. It would not be difficult to wax enthusiastic about the general usefulness of the roses that can be called climbers. They are climbers because they are vigorous, and that means, for the most part, that they are enduring and accommodating. If the dreadful contingency should arise that would confine me to just one rose as my own rose, I often think it would probably be one of the hardy climbers, and I almost know which one it would be.

As, therefore, this is not to be a botanical disquisition nor a complete one, I can follow my own preference, which is to stay closely within the roses of my acquaintance. In the past twenty years and more I have had to do with many roses from many lands. My preference for those called "climbing roses" can be accepted when it is realized that out of something less than eight hundred varieties at Breeze Hill, 155 of them are in the climbing class, and presumably, unless the winter which is working through its entirely too warm weeks as I write is radically unkind, the hardy climbing roses.

To get off to a good start, I am going to quote what I think is the best definition I have yet read of a climbing rose, from G. A. Stevens' new book "Climbing Roses." Thus he writes:

"In the scientific sense no rose is a true vine as most other climbing plants

are. Nature failed to provide rose bushes with either the tendrils of the grape, the twining habit of the wisteria, the aerial roots and suction pads of the ivy and ampelopsis, or the coiling petioles of the clematis. Evidently Nature intended the rose to spread or clamber over other shrubs, cliffs and convenient tree trunks, and for that purpose furnished them, in most cases, strong, sharp prickles which would hook in almost any kind of support. Some climbing roses have a slight power of climbing by accidentally encircling their support, but in garden use most of them need to be tied up if they are to make their best display."

We attempt to classify climbing roses in these days broadly by their hybrid origin. There are certain roses which would follow Mr. Stevens' definition, but they are not definitely hardy. *Rosa gigantea*, for example, with its ability to go sixty feet in a season, and the exquisite, less ambitious but yet vigorous, smooth-leaved climber that used to delight me as it sprawled over the entrance to one of the buildings in which Dr. Van Fleet worked at Bell, *Rosa gentiliana*, are not hardy in the sense that the roses covered by this paper ought to be. Our own native *Rosa setigera* is hardy enough, and extremely valuable because it is not only hardy but beautiful. Yet it is somewhat of a strain to treat it as a climber. All the rest of our climbing roses, from the Baltimore Belle and Prairie Queen of Samuel Feast's Baltimore production in 1840, down to the last ambitious attempt to combine the richly colored and large-sized hybrid tea flowers with



McFarland Co. ©

Rose, Dr. W. van Fleet

climbing vigor, are hybrids, and sometimes mightily mixed.

Indeed, it is one of the characteristics of the whole group that while there are differences, they are not easily noticed. I should regard with considerable admiration, not unmixed with doubt, anyone who would walk among the Breeze Hill hardy climbers and unhesitatingly pick out as he walked those which he could surely say were of Multiflora or of Wichuraiana parentage. I have never heard of rose divorces, but I certainly do know of mixed marriages among the subjects of the queen of flowers, so that the hybrid of a hybrid of two or three other varieties, themselves of hybrid origin, certainly has a host of forbears!

One likes to contemplate a rose that will "go it alone," so to speak, not requiring any sort of coddling, pruning, or rejuvenating. I do not know, however, where that contemplation can take place in any garden, because the only roses fit to go it alone would be some of the hardy climbers, as well as certain of the "species" roses, particularly including the Rugosa hybrids. Many of us will remember the early plants of *Rosa hugonis* growing in the rose-garden at Arlington, and how in the kindly conditions there provided they spread and spread, and sprawled and sprawled until they were no longer ornamental or desirable. I have seen a good, husky plant of a hardy climbing rose which does not climb but instead sprawls, covering more than a ten-foot spread on the lawn at Egandale when that prince of plantmen, the late William C. Egan, tended it. But I have also seen the same variety get, as it were, out of hand and require the easy renewal of shearing off so that it could make new stems and new

branches and thus become again more desirable. Yet I have likewise seen single plants of any one of a dozen, or twenty, or fifty of the more vigorous climbers allowed to sprawl into a picturesque habit in the edge of a shrubbery, and be there a great glory when in bloom, and at least as sightly as the average *Spirea vanhouttei* when out of bloom.

There is desirability, however, in the climbing roses, which could be treated as this very day I have been treating certain grapevines at Breeze Hill, several of those vines being more than sixty years old and yet retaining the central distinctive trunk from which each year arise the shoots that a year later will provide the fruiting branches. Such roses are usually of the climbing hybrid tea type, which means that they are, in a sense, ordinary garden roses that have gone wrong—that is, that have substituted growth for bloom. Thus the climbing form of the almost universal Radiance grows freely, but it does not bloom with anything like the profusion of its parent. I know of none of these "sports" from the garden size that keep up any great bloom delivery, though all of them are desirable because they do sometimes in autumn provide the scanty, recurrent crop of flowers that are then doubly precious. It is a quality of these roses that they must not be handled as other types of roses are handled, else they will just grow and grow, and never bloom. That is, they must be kept to an old, rugged and quite dead-looking central stem, or several central stems, from which arise each spring the blooming shoots. So far as I know, the only rule that can be adduced concerning this class of roses is to find out by personal experience and observation just which are to be so treated. We are also aware, how-



McFarland Co. ©

Rose, Scorcher

ever, that the only existing hybrid with *Rosa bracteata*, the exquisite Mermaid, will, if vigorously pruned, grow but not bloom, whereas if those old and disreputable looking, almost dead central stems are left, an all-summer bloom delight will come.

Most of the originations of the late Captain Thomas fall into this class of scantily pruned climbers; that largest, richest and deepest-colored red rose of all the climbers, Countess of Stradbroke, which came from Australia to please us several years ago, must not feel the pruning-knife; the old veteran of 1853, Gloire de Dijon, is in the same class, and here I might as well admit that the most of the Australian roses, of which only one was mentioned above, resent vigorous pruning. If you want to see the best of Black Boy, Scorchers, Miss Marion Manifold, Daydream, Nora Cunningham, go easy with the knife!

The great majority of present-day hardy climbing roses arise from the same Multiflora parentage that brought us Crimson Rambler from China, through England, nearly forty years ago; or are in the larger-flowered group, somewhat later, relating to what was first sold as the "Memorial Rose," *Rosa wichuraiana*. The Multiflora climbers tend to small, clustered blooms, for the most part, and are very much less important. They are being more and more supplanted by the Wichuraiana parentage, which has provided us with a superb group of roses. Nevertheless I do not discount the value of Dorothy Perkins, Tausendshön, and a score of other vigorous and pleasing Multiflora hybrids.

If I had to confine myself to but one hardy climber, I should, in accord with a previous hint, probably select Dr. W. Van Fleet, which has better

combined vigor and higher rose beauty than any other one sort, at least in my humble opinion. (Isn't it a misfortune that the name selected by the modest genius who originated this and so many other good things, who wanted to call it "Daybreak," should have been denied him by the Henderson firm, which introduced it in 1910?) Since the introduction of this exquisite rose, which has a mixed parentage, including the Tea rose, Safrano, and the Hybrid Tea, Souvenir du President Carnot, on a Wichuraiana base, we have had many other large-flowered climbers. Probably the largest bloom of all (unless it be the recent Spanish introduction, Mme. Gregoire Staechelin) is another of Dr. Van Fleet's roses which was named "Breeze Hill" because it was my insistence that saved it for cultivation. This was the first cross over into the fascinating and aggravating rose bloodstream derived from *Rosa foetida*, and I can yet remember the letter Dr. Van Fleet wrote when he sent me, November 3, 1916, the first plant as "WP 1" with the remark that it was "a poor grower but worth waiting for." The good Doctor did not realize that this rose, like many other hybrid climbers of mixed parentage, needs a chance to get its feet well into the ground, and that then it will grow with all desired vigor.

Now these Wichuraiana climbers have vast usefulness. From the definite white of Purity to the deep crimson of Dr. Huey, from the sunrise tints of Breeze Hill to the clear, warm yellow of Mrs. Arthur Curtiss James, we have almost everything in climbing rose color that we have in bush rose color. In not a few cases I suspect that the parentage is partially Multiflora, but what difference does it make if the rose is a good rose, a



McFarland Co. ©

Rose, Breeze Hill

beautiful rose, a hardy rose, and one that will vigorously climb when it is wanted?

Broadly speaking, I should pay no attention whatever to the hybrid origin of any rose I wanted within the climatic range of the groups I have been discussing. For most of the Middle States they are hardy, though the chill breath from the Great Lakes will sometimes cripple and sometimes destroy them. Those who are interested to experiment should find in the catalogues from which they buy, honest expressions as to adaptability and hardiness. It is good news to have to say that one brilliant worker, Mr. M. H. Horvath, who lives where 20 degrees below zero is not the severest weather, has produced a group of hybrids with *Rosa setigera* that pay no attention to low temperatures. Some of these roses, as yet unnamed, are extremely beautiful, and I think we will shortly have good and really hardy climbers for some of the below-zero states. For those who expect roses to endure without damage 40 or 50 degrees below zero for many successive months, there is also hope in the work of Professor N. E. Hansen, who in South Dakota is endeavoring to secure complete hardiness.

I have not said anything, so far, about the roses particularly adaptable to the warmer part of America, the South Atlantic States. These fortunate folks do not have enough climbers because they are lazy about it. They have not made use of their opportunities with *Rosa bracteata*, *laevigata* or "Cherokee," or *Banksia* bases upon which to work. Nor do they sufficiently use the lovely Noi-

settes. All the climbing Hybrid Teas can be at their best with them, as they are in California, and the Gigantea race, brought most fully to our attention through the work of Alister Clark in Australia and being hopefully pushed along by Father Schoener of Santa Barbara, can give them other roses as glorious as is Belle of Portugal—properly *Bela Portuguesa*. (It may be that before these words are read a Belle of Portugal seedling, Susan Louise, will have proven ability to live over another winter at Breeze Hill, in which case, I shall feel that a new item of pleasure has been added to the climbing rose field.)

Fragrance is not a characteristic of most climbing roses, alas! Yet there are excellent varieties that delight us with sweet odors. That rose of the South, *Maréchal Niel*, is sweet. The old *Glorie de Dijon* has the same merit. Climbing American Beauty has rich fragrance and the lovely but little used *Zephirine Drouhin* is even finer. The exquisite pink *Evangeline* adds sweetness to the beauty of its single blooms. There are others!

From these observations it can be gathered, I think, that I commend climbing roses not only for the garden, not only for their peculiarly decorative use where the overhead feature is desirable, but for shrubbery and roadway items of useful beauty. They will always be good for a glorious splash of bloom, and we will before long have varieties that will extend that splash as recurrent flowers come. All the season through they will be good for graceful foliage, and their winter twigs commend them to me this January day on which I write these words of last year's rose memories.



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Cherokee Rose

Gertrude Jekyll

BY MRS. FRANCIS KING

To find the legacy left by Gertrude Jekyll one need not wander far. In all countries where is the least English influence, every garden has the imprint of her eye and mind, of her suggestion, translated into a happy neighboring of plants and flowers. All over Britain, throughout the United States and Canada, and wherever the Anglo-Saxon has made himself a home in any continent, Miss Jekyll's books are on his table, her principles of fine gardening shining in his borders. Almost no modern garden of distinction and intelligence (and the last implies the first) but shows forth her influence.

Prepared for the creation of pictures in the garden by her studies in drawing and painting, Miss Jekyll set herself so to arrange her various garden spaces, her borders at Munstead Wood as to make pictures in flowers and foliage. Composition was her delight, color her special joy, long harmonies in the border, contrasts and accents in planting, the use of grey-leaved material of "between plants" as she called them, the nice placing and training of the rather difficult subject such as Michaelmas Daisy toward the front of the border, the element of surprise as in the turn of a garden path, and a most thorough study of succession of bloom in the garden, all were her daily pleasures, and the communicating of these pleasures to others through her "simple monastic style" the natural result of this work in her garden. The time was ripe for both work and books; for William Robinson's "The English Flower Gar-

den" had appeared to bring into favor the old English garden flowers. Miss Jekyll became the apostle of their beautiful use.

And what a gift to the world is hers, what a heavenly leaving! How could it have come? Only from a life devoted to the things of beauty in many directions, coupled with that "bequest" of Sir James Barrie's recent address "the joy of hard work." No better gifts than these may be willed to mankind, the love and understanding of beauty in the garden and the enjoyment of activities entailed by creative gardening effort, physical, mental, spiritual.

Miss Jekyll's unmatched power in setting garden pictures before the amateur derives from several sources. While the world knows her books on gardening, how many have heard of her study of drawing and painting, of her work in the crafts such as water-gilding, gesso, repoussé work, and wood-carving. "Indeed," says the *London Times*, "there was little that her skillful fingers could not bring to perfection from a piece of finely wrought decorative silver down to the making of garden boots." Her book, "Old West Surrey," reissued in 1925 as "Old English Household Life," testifies to her interest in and her knowledge of the crafts of an earlier time. This book and another, "Children's Gardening," are not as widely known as they should be. An austere beautiful English prose formed the medium for setting forth the word-pictures of the garden. The photographs enriching Miss Jekyll's pages were her

own, and composition and color discussed as never before or since, glow in her writing.

With her artist's sense, Miss Jekyll did, of course, the large thing in the development of Munstead Wood. The house, designed by her friend, Sir Edwin Lutyens, was perfection for its region and site, the garden plan with its vistas and various spaces for special types of gardens, perfection for its house. Munstead Wood stands as one of the best possible examples of the tying together of a house and its land, of house and garden, and of wood and garden, to use Miss Jekyll's titles.

This passage is eloquent for us all. "In the House of Nature there

are many mansions, inhabited by widely divergent spirits. Darwin and Wallace took continents and oceans as their laboratories wherein to study strange and living creatures; Wordsworth and Tennyson, lifting their eyes to the hills and the sky, discoursed of religion and philosophy; Gertrude Jekyll, to whom we now bid a grateful 'Hail and Farewell,' sought ever for practical knowledge allied to beauty and in that quest whereby she may truly be said to have transfigured the gardens of England, she never grew old at heart or wearied in mind, was never discouraged by difficulty or defeated by failure, neither did she cease to share widely the fruits of her long and loving apprenticeship to Nature."



From Mr. van Melle

Geranium sanguineum prostratum

[See page 100]

The California Manzanitas

BY LESTER ROWNTREE

If it were not for that little gadabout manzanita, *Arctostaphylos uva-ursi*, I would like to call the arctostaphylos a "little-known genus." Also I would like proudly to refer to them as "the California arctostaphylos." But *Uva-ursi* puts a crimp into that, too. In fact *A. uva-ursi* is either the black sheep or the flower of the genus, I can never make up my mind which. She is the one species that is native to many countries. She is a good mixer. She is a tremendous traveler, either skirting the coast or skipping along the mountain ranges. She is found in California, New Mexico, British Columbia, Alaska and points east,—or, as Willis L. Jepson puts it "thence round the earth in northern regions." She is certainly an internationalist. But as she is apparently excessively particular regarding the exact spots in which she chooses to grow, we can at least label her as "not adaptable."

It is hardly necessary to describe this little world-wanderer. A dark, small-leaved prostrate trailer, rather slow growing and bearing bright red (sometimes pink) berries. Along the coast of central and northern California it pals along with huckleberry bushes beaten flat by sea winds so that the two entirely distinct species look much alike.

As the twenty-five or more Californian arctostaphylos species vary in height from carpeting plants to shrubs of almost tree size, I am, by way of trying to lighten your burden, going to separate them into three sections; the prostrates, the small bushes and the large shrubs, and mention a few representatives from each class. Let

us hope I can confine myself to a few. For they are a fascinating lot and it is difficult for a manzanita enthusiast to draw the line.

Individual as they are, the manzanitas are alike in the shape of the flower, which is urn-shaped and waxy, sometimes white, often flushed with pink and sometimes a real pink. They also all have berries, differing in size and sometimes in shape. The bark of the exceedingly hard wood is usually smooth and polished and almost always a rich red or brown-red. The branches of many of the species are conspicuously crooked. The manzanitas like the ceanothus, are gregarious. Also like the ceanothus are quite squeamish about boundaries. Each species has its own characteristic stamping ground and the mountain manzanitas are so strict on this point that any one who is familiar with their haunts could be taken into their precincts blindfolded and upon release of sight could tell the altitude by the prevailing manzanitas.

Two prostrates, *Arctostaphylos nevadensis* and *A. pumila* live far apart and yet they are not so much unlike. The former, pine-mat manzanita, is a characteristic plant of the High Sierras in the central and northern part of the state. It carpets the floors of pine forests and hugs gray granite boulders. Evergreen, and always beautiful, it is a constant joy to the mountain traveler. The leaves are small and shining, the bark glossy brown-red and the flattish berries carmine at first and then brown. *A. pumila* lays claim to the label of "endemic," for it seems to be found nowhere else but on the Monterey Peninsula, and, with



L. Josselyn

*A sandy stretch on the central California coast. The low growth contains *Arctostaphylos tomentosa*, *Hookeri* and *pumila*; the medium sized shrubs are *Cupressus Goveniana* and the trees are *Pinus muricata*.*

the "improvement" of property it is rapidly disappearing from there. It makes more of a mound than a carpet, keeping a rather symmetrical roundness and rooting more repeatedly than the pine-mat manzanita. Its small leaves are a soft gray-green and so numerous that they almost hide the branches from sight. The berries are real "manzanitas" (little apples), round and at first red-cheeked, perhaps the most decorative of all manzanita berries. I doubt if the hardiness of *A. pumila* has ever been tested, but in case you contemplate growing it, give it deep fine sandy soil, not much water and not much cold weather. *A. nevadensis*, on the other hand, is equal to any amount of cold and will thrive in rocky crevices, de-

composed granite, leaf mould or a mixture of all three.

The group of small bush manzanitas is an interesting one. Here, too, the different members show a similarity and yet are found in widely separated places. There is *A. nummularia* of the Mendocino County coastal plain (northward and containing much fascinating and distinctive flora); *A. Hookeri* localized in the San Francisco region and a little southward; *A. myrtifolia*, an aloof little endemic limiting its stand to one or two places in the Sierra foothills; and *A. sensitiva*, growing sometimes a bit taller than the rest of the group and keeping to the coastal ranges a little north and a little south of San Francisco. All of these manzanitas carry with

them a proud distinction and yet each is individual. They all have small leaves but they vary both in the shape of the leaves and of the shrubs. In cultivation, *A. myrtifolia* and *A. sensitiva* will stand heavier soils than the other two. The bright glossy leaves of *A. nummularia* cover the branches thickly, the shrub becomes rounded in age and often grows several feet tall. *A. Hookeri* varies in size also, in sheltered places reaching over three feet and on the coastal bluffs crouching to prostrate form before the sea winds. The leaves of this *arctostaphylos* are very shining and are borne rather scantily on gracefully spreading boughs. It makes a splendid little shrub for rock-work and should be used more in California landscaping. *A. myrtifolia* is more of a miff than the rest and, not being content to give trouble in transplanting is very chary about seed-bearing, apparently not wishing to become "common." But though a prude it is a very lovely little shrub. *A. sensitiva* is an up-standing bush with hairy branchlets, roundish leaves and oblong berries.

A. bicolor refuses to be bunched with any of the others. It is the temperamental member and lives alone near the San Diego County coast, adventuring down into Lower California. It is an interesting and lovely thing, quite tall and with very dark green, shining, revolute leaves, rose-pink flowers and glistening red-black berries. It carries itself with an air and inspires immediate affection. In western San Diego County whole hillsides are covered with it and I often find myself looking forward to seeing it again, with the eagerness and expectancy of renewing an old friendship.

The group of tall manzanitas contains so many rather similar species that some will have to take the consequences of being un-individual and be

dropped from the honorable mention class. This group forms much of the dense growth that covers the California foothills for hundreds of miles and mingles there with *ceanothus* species, *adenostoma*, scrub oak, *rhus* and *rhamnus* and all the other pushing, crowding shrubs which congregate to form that delightful state-wide thicket so dear to the heart of every Californian,—the chaparral.

A. glauca is the giant of the lot,—at least as far as berries go. It is frequent on the warm foothills of central and southern California, grows sometimes to small tree size, has large roundish gray-green leaves, large white flowers and bunches of big round sticky berries which hang down like grapes. It would be grand for bold landscape work where native shrubs were needed. *A. patula* is as much a part of the Sierras as its creeping relative, *A. nevadensis*. It forms open spreading bushes covering several square yards and several feet tall and has large rounded bright green leaves, distinctive in a genus where so much of the foliage is gray-green. These wide bushes fill spaces between yellow pine, white fir and incense cedar. Whole mountain sides have a green floor of *A. patula* and a green roof of fir and pine. The flowers are deep pink and the rather flattish berries turn brown early in life.

Arctostaphylos viscida's claim to distinction is the light gray, almost white foliage and branchlets. It has pink flowers, large round sticky red berries and is especially particular about keeping within its own zone—that which lies between the camp of valley manzanitas and the strongholds of those clans inhabiting the mountains proper. *A. manzanita* lives among the inner coast ranges and is recognizable by the tree-like ambitions of its trunk and stems, its narrow, smooth, pale green



Lewis Josselyn

Arctostaphylos Hookeri

leaves, drooping panicles of faint pink flowers and berries at first white and later red-brown. *A. Andersonii*'s idiosyncracies are its large-eared leaves crowded on the branches and its tight terminal bunches of flowers. *A. Andersonii* keeps to the low mountains of central California. *A. tomentosa* is a coastal species rarely venturing far inland. It makes a low wide shrub, well clothed with downy gray-green leaves, which is associated with the pine-clad and fog-wrapped seaward slopes of central California. Its close but larger relative, *A. glandulosa*, more cosmopolitan, bounds it on the north and south. *A. insularis* is limited to the islands of the Santa Barbara Channel. It, like most of the island

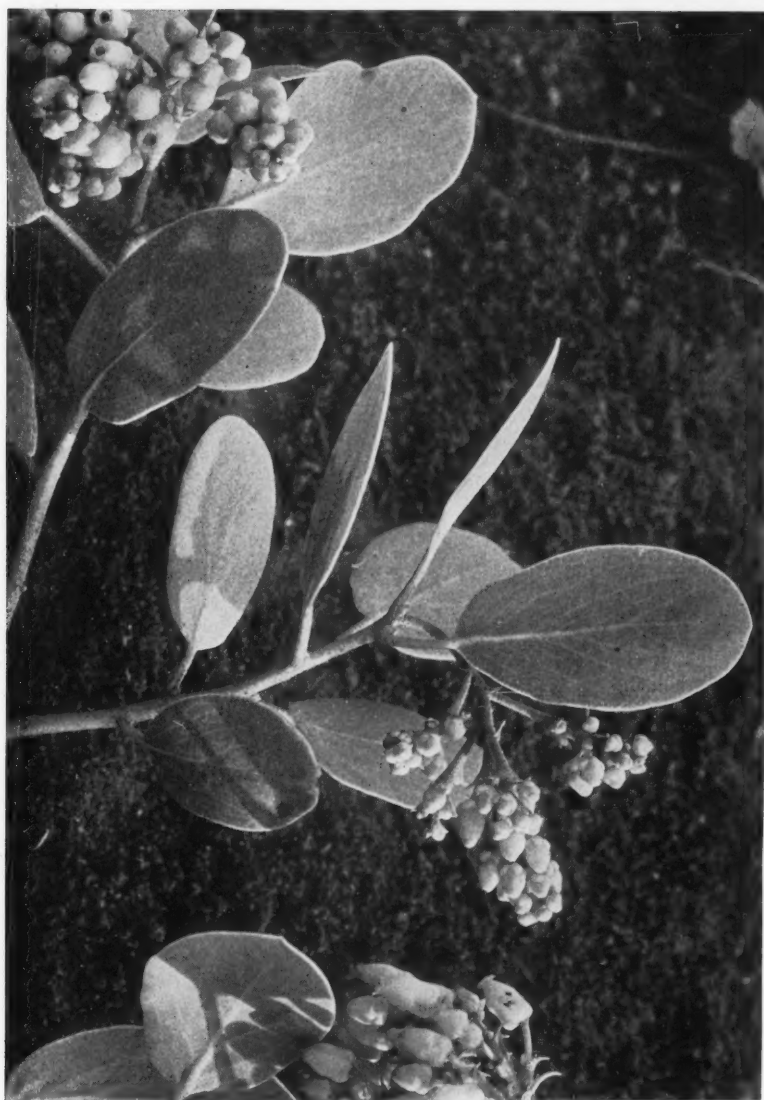
shrubs, is a glorified member of its genus, with no very striking botanical distinction but with a glamor born of its free sea-encompassed environment.

The manzanitas are an integral part of California's landscape and history. Their berries have for ages fed the California bears and were a staple article of the Indians' diet. White people have used them for jellies, vinegar and brandy. The rich smoothness of the crooked mahogany-red branches and the exquisite purity of the bloom is always a subject of remark to the tourist. And to the Californian the manzanitas are as closely interwoven into his memories of the state as the fields of wild mustard, the carol of the meadow lark and the scent of burning eucalyptus wood.

Geranium sanguineum prostratum (G. lancastriense) is a very valuable plant, not only for the Rock Garden but as well for use atop a retaining wall. It begins to flower, here, about May 1st and continues intermittently into October. [See page 95.]

Rather slow in establishing itself, being one of these deep-going, woody-rooted things, it is, once settled, a very reliable and permanent plant. It makes rambling cushions of foliage, some four inches high and bears pale, clear rose-pink flowers with deeper-colored veinings. It thrives in full sun or in light shade and seems to prefer a light, deeply prepared soil.

If raised from garden-gained seeds, the seedlings seem to maintain well enough the low, rambling habit, but not reliably that clarity and size of flower. Many of the seedlings run to darker and dingy shades. None of the seedlings in my garden can compare with the clump shown and the pieces taken from it.



Harry H. Haworth

Arctostaphylos mariposa

The A B C's of Rock Gardening—III

BY ALICE MINER

If a rock garden can not be satisfactorily fitted into the garden plan and the owner's heart yearns to grow alpines, a dry wall may be a happy solution.

A double faced wall may be built on a boundary line or used to separate the vegetables from the flowers. Such a wall is used in my own yard between the tennis court and the lawn area.

If the property can be graded into more than one level, a retaining wall may be built. Another lovely effect may be produced by planting the walls of a sunken garden.

The ideal exposure for a dry wall is east or south with at least a half day of sun. One facing north will give a minimum of bloom while a west wall will require slightly more watering and a selection of plants that like the hottest sun.

CONSIDER THE MATERIALS

There are a number of materials that are useful for dry walls. My own preference is for weathered stratified limestone but if this is not obtainable old bricks, broken cement pieces, granite, lime- or sand-stone boulders may be used. Old bricks and stone are sometimes combined in English gardens with charming effect but normally it is wiser not to use mixtures.

The builder who uses one of the less attractive materials may console himself with the thought that in a very few years, the plants will cover the wall generously and little of it will be left exposed.

Plenty of the rock garden soil mixture, such as that described earlier, a

box of gravel, the customary tools and the garden hose will also be needed.

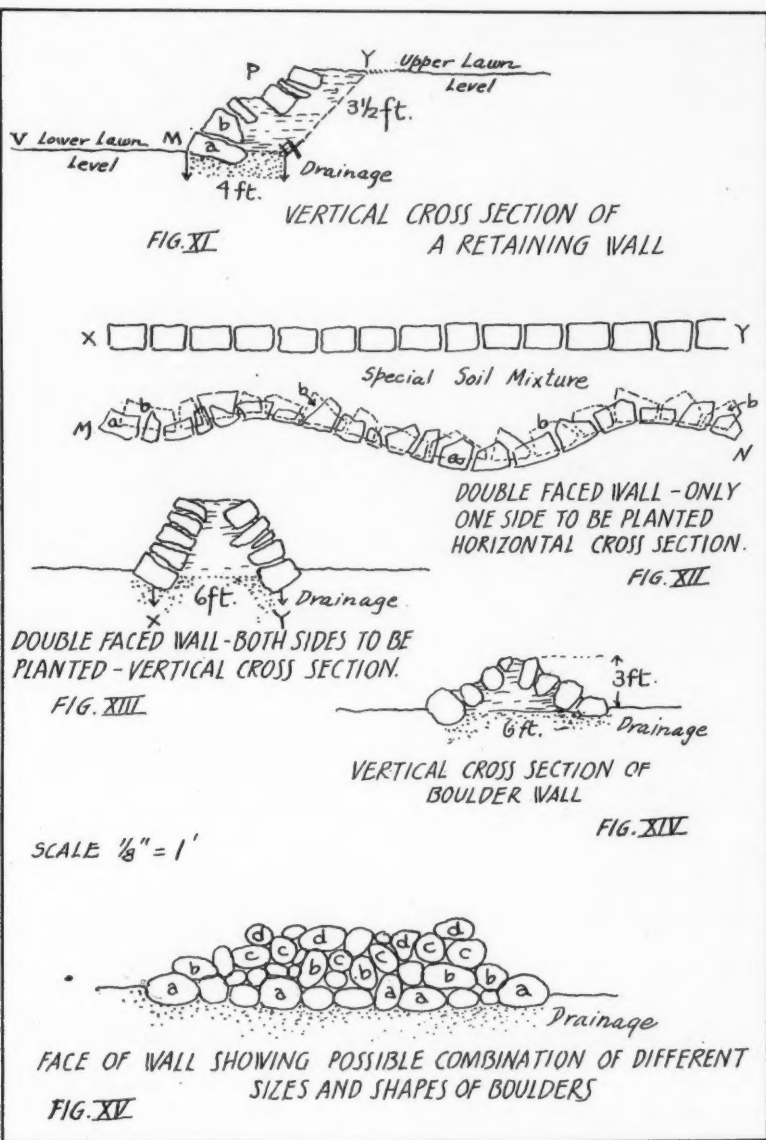
CONSTRUCTION BEGINS

With the garden hose, mark the outline for the first course of stone. In plan XII, M N would be such a line. An irregularly built wall has more individuality than one built to a chalk line. You will note that the line just established with the hose is well away from the bank against which the wall is being constructed, the distance M X in plan XI being about 4 feet. This is necessary to give an ample amount of good soil in which these long greedy alpine roots may stretch themselves. It is well to allow generously for this space as it leaves the builder plenty of latitude in which to vary the angle of slope in the wall. He may, for example, wish to leave a wide ledge such as the point P on plan XI while other sections may be carried up at an abrupt angle. In fact there are unlimited possibilities of variation and it is almost impossible to make the wall too irregular.

Drainage must be provided in just the same manner as in rock garden construction. The depth of the drainage material will, of course, be governed by the kind of soil as has been previously discussed. Provide plenty of drainage under a double faced wall as it will help to prevent heaving by frost.

In plan XI, V indicates the lower and Y the upper level; and X Y the original line of the grass terrace dividing them. It is assumed that the difference in levels is about $3\frac{1}{2}$ feet.

On the line established, such as M N in plan XII, place the first course





View of Wall Between the Lawn and Tennis Court

The two trees have since been cut down to give the wall more light

of stones which in this horizontal cross section is marked "A." Referring now to plan XI you will note that these stones are not laid parallel to the ground but are tilted backward. This is done to conserve moisture and prevent soil loss. The narrow ledges so formed are ideal planting spaces for most alpine plants as the foliage will be kept free from soil spatters and there will be no danger of excess moisture around the crowns.

The prepared soil mixture is now placed over the stones. The space between the stones and the bank is filled with it and it is then thoroughly stamped down. A few pieces of gravel should be incorporated in the soil on top of the stones so as to prevent the succeeding courses from pressing the soil into too thin a layer. The stones in each course and the courses themselves should be about 2 inches apart.

The second and each succeeding course is laid and the soil packed in between them in the same manner. Care should be taken to place each course so as to cover the joints in the one beneath. This is indicated by the

dotted lines and letter "B" in plan XII. This is a vital factor in the construction and the utmost care should be taken to make certain that this has been adequately done since it will minimize soil loss.

As the courses are added a little experimenting will soon show the builder how best to combine the different sizes and shapes of stones. In the drawings I have assumed that the material used is stratified limestone but the same principles apply no matter what material is used.

The cross section in plan XII shows one way in which the wall may be varied. The wide ledge at point P may be used for plant material requiring a greater space than the narrow ledges of other parts of the wall.

If the builder prefers an uninterrupted slope, the upper part of the wall should be carried up in the same manner as the first two courses.

In the preceding article, plan X shows a rock garden treatment for a difference in two lawn levels. Either method of treating this space will be charming, the rock garden is less formal but takes more space while the



Typical section of old wall showing generous growth of plants; dwarf iberis and mossy saxifrages blossoming in foreground.

wall will be more formal and take less space.

In the picture of my own planted wall which is in the first one of this series of articles, it will be noted that the slope and contour of the wall varies greatly. One section juts out sharply just beyond the pool, and has a much more gradual slope than the section in the foreground. The stones directly above the pool are beautiful examples of the stratified weathered limestones. This picture was taken a week after rebuilding.

In the pictures included in this section you will see the wall as it was before its recent rebuilding. Here are shown examples of over hanging

rocks, and it will be noted that al-pines will not grow in such a location. This illustrates clearly the necessity of placing each succeeding course well back from the edge of the one below so that sun and moisture will be equally available to all the plants. These pictures will give you an idea of how completely the plants will cover the wall. You will perhaps wonder why it was rebuilt. The over hanging stones, insufficient gravel between courses resulting in inadequate planting space, and the fact that the lower part of the wall was falling to pieces because of faulty construction were the deciding factors. The large plants seen in these pictures

were divided and replanted and have not yet quite recovered from the shock though in another year or two I shall again be wondering what to do with them all, for once established they are busy growers.

A DOUBLE FACED WALL

Plan XIII is a vertical cross section and plan XII is a horizontal cross section of a double faced wall.

In plan XII it is assumed that the wall is on a boundary line and that the outer wall will not be planted. If there is only sufficient stone for one wall, tile or cement blocks or other material may be used in the wall next to the boundary. A screen of shrubs should be planted to conceal this relatively unattractive material from the public eye. The shrubs will also serve as a background for the planted side of the wall.

If, however, the wall is located so that both sides are to be planted the shrubs should not be used. Whatever the materials or location both sides of the double faced wall should be carried up simultaneously by exactly the same method as described for a retaining wall. The space between the walls should be filled with the good soil mixture as they are built.

The distance between the points X and Y in plan XIII will depend on the height of the wall and the amount of planting space desired at the top.

In this plan 6 feet has been allowed between the walls at the bottom and $2\frac{1}{2}$ at the top, the wall being approximately $3\frac{1}{2}$ feet high. The treatment of the planting area at the top will depend on the location of the wall. If additional height is desired such evergreens as *Juniperus Pfitzeriana* or *Juniperus Kosteri* while *Rosa Spinossissima* might be used between the evergreens or massed at the ends of the wall.

My own wall is completely covered at the top with trailing roses and Junipers. This is clearly shown in the photograph carrying the legend "Wall Newly Rebuilt." I have found the most satisfactory varieties for this purpose to be Rose, Max Graff or Lady Duncan, and *Juniperus chinensis procumbens*, *J. horizontalis Douglasii*, *J. horizontalis Sabina*, and *J. chinensis Sargentii*.

A planting of the larger growing alpine would be charming though even then I should like to see some types of dwarf evergreen used.

WALLS BUILT OF BOULDERS

If boulders are used for a wall more difficulty will be encountered in the construction. A few years ago I had my first experience in building a double faced boulder wall. After considerable experimenting I found that a perfectly solid wall can be achieved if the slope of the wall is very gradual.

The drainage was put in and then the first course "a" in plan XIV was laid for each wall and the soil firmly packed between the stones and level with their tops. Then the boulders marked "b" were put in behind those in the bottom row and always as close together laterally as possible for in this type of wall the danger that the soil will wash away is very great. Each succeeding course was laid in the same relation to the one beneath so that the completed wall has a very gentle slope.

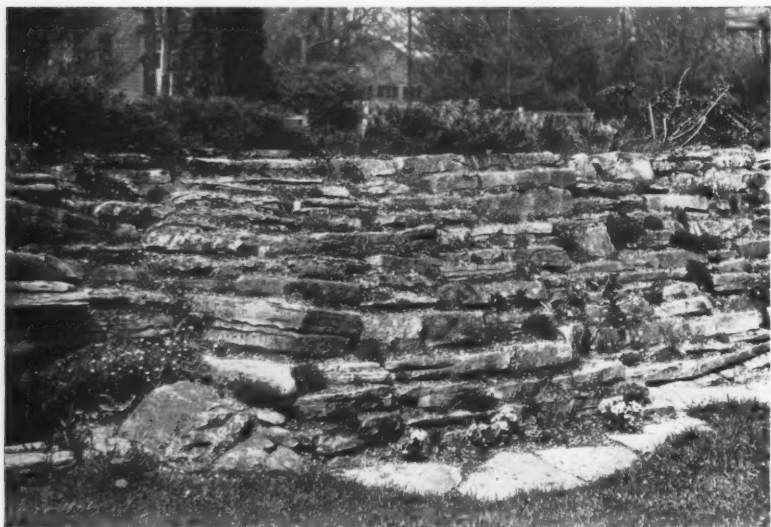
Plan XV suggests possible ways of combining the different shapes and sizes of the boulders.

WHEN TO PLANT

The ideal time to plant is during the construction when the roots may be spread out to their fullest extent. A small evergreen such as *Juniperus*



Section of wall before rebuilding showing overhanging rock which prevents plant growth beneath. Primula auricula in foreground.



Wall Newly Rebuilt

Note irregular contour

chinensis nana or *Taxus cuspidata* nana is fascinating, cropping out from the face of a wall and, obviously, space for any plants having such a large ball of roots must be arranged for as the wall is built.

However, if it is impossible to plant during construction it can be done later. After trying many different methods I have finally worked out one that has proved to be successful.

With a stout crow bar, raise the stone immediately above the spot in which you wish to plant. Even a stone near the bottom of the wall can in this way be raised the necessary inch or so. Dig out a larger space than that required for the roots. On the palm of the left hand place a thin layer of soaking wet sphagnum moss, sprinkle a light layer of good soil, spread out the roots of the plant and

put soil and wet moss on top of them. Now with the assistance of the free hand slide the whole mass into the hole. Remove the crow bar allowing the stone to drop back in place. Gradually fill the hole with good soil, packing it firmly around the roots with a small "chinking" stick. Reserve a small space at the opening for a final packing of wet sphagnum.

The use of wet sphagnum in this fashion provides a more constant supply of moisture to the plant roots and holds the soil in place while the roots are establishing themselves. It will absorb additional moisture readily and eventually incorporate itself with the soil. I have had practically no losses since using this method.

The wall may be built at any time of the year that weather permits but should be planted in the spring or early fall. Summer planting is possi-

ble but will require constant care and the chances of high mortality will be greater.

The choice of plant material depends upon the result desired by the gardener. One may be interested only in a collection of rare and difficult plants while another may want plants giving a splendid splash of color and requiring little attention.

The climate of your particular lo-

cation will in a measure determine what can be grown successfully. Many things that do well in the English rock gardens fail utterly in my garden while others said to be difficult grow here readily.

After the rock garden or wall is built the search for plant material will be absorbing as long as gardeners garden. What to put in now, however, is the question ahead of us.

Osmarea Burkwoodii.

Osmarea Burkwoodii is one of the really fine new shrubs. It is a rather dwarf, dense-growing evergreen of good habit and bears handsome, lustrous, deep-green foliage. The small, milk-white flowers are borne in few-flowered clusters in the axils of the leaves toward the end of the branches. They are pleasantly fragrant and add considerably to the ornamental qualities of this shrub.

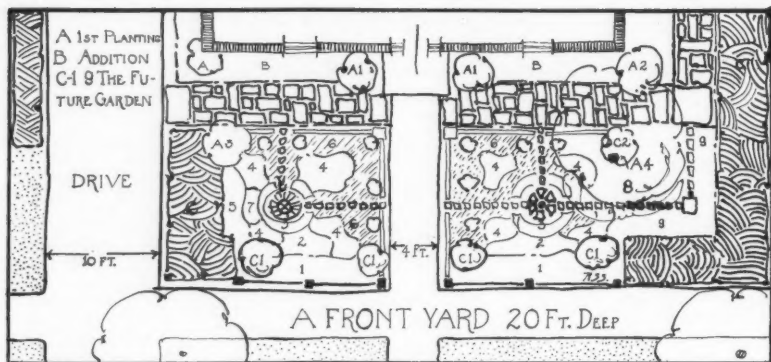
This bi-generic hybrid, whose parents are *Osmanthus Delavayi* (seed) and *Phillyrea decora* (pollen), two very fine Asiatic shrubs, was raised by Mr. A. Burkwood on Kingston-on-Thames, England. It was Dr. E. H. Wilson who proposed the name *Osmarea*, which combines the names of both parents, for this plant. It is

claimed to be absolutely hardy by its introducer and to have endured thirty-two degrees of frost in the open without protection and with no ill effects.

Mr. Burkwood sent me six plants to try in the United States in 1929. Our recent abnormally mild winters have not been a real test in the hardiness of any plant and unfortunately rabbits have greatly damaged the two bushes I had in the open. I think, however, that in a suitable position and with some shelter from the north winds, *Osmarea Burkwoodii* will be hardy here. It is well worth a trial, for no one could fail to admire this shrub for all its good qualities, and in addition for the grace of its simple, unobtrusive beauty.

MRS. J. NORMAN HENRY.

Gladwyne, Penna.



Six Studies of the Front Yard With Planting Plans

BY ROBERT S. STURTEVANT, M. L. A.

THE FRONT YARD—20 FT. DEEP

A front yard seems to retain its name as long as it is open to the street and serves, visually as a foreground to the picture dominated by the house. As it becomes larger in area and permits the house to be screened from the street our interest in the view out from the house with its doors and windows increases. The house still dominates the plan but we ourselves see it less frequently from a distance. Despite this limitation of subject even the narrow front yard offers a wide range of possibilities. It also creates for the passer-by or visitor a first impression of what we are, and first impressions are important.

Let us start with an average small problem, the low set house pleasantly symmetrical in plan, the owner interested in appearances and perhaps in flowers, the ground rising gently to the house, and our garden problem

simplified by an absence of big overhanging trees. As to the planting the minimum is marked with A. Areas at B are frequently planted also, the height determined by the height of the apparent foundations of the house while C in part or in whole might be added for greater privacy. Occasionally a garden lover living on a side road might develop the whole area into a cottage garden but even an herb garden possesses little winter interest.

Naturally, in so small and in so important a spot we must select our plant materials with especial care as to all-season interest and suitable color and size. Most people avoid a clash of colors but few can resist planting too many different kinds of too large a size for permanence of effect. We should stick to dwarf or low growing vegetation with occasional heights of compact pyramidal form or carefully sheared standards. The material and color of the house wall should be

considered, e. g. the smooth or painted wall suggests gloss and fine texture in the foliage. We like some contrast of light against dark, or, an occasional harmony in the gray of juniper and shingled wall or stone, and the contrast of rhododendron against clapboards is rarely pleasing.

Accents that appear to enframe the door come first in importance. They may be close to the house or out a bit at the corners of the stoop. The house facade suggests the shape we need as the plants should never hide the delicacy of pilasters or darken adjoining windows. Three shapes give satisfaction in their definition: the mound, the standard, and the columnar. The mound may be natural or sheared but it should never be leggy nor become a ball on a stick as our interest is in its silhouette. With a small house the planting here can rarely exceed four feet in spread though its effective height may range from two feet to over twelve in a tall standard.

Though things like the Harison Yellow rose tend to have few trunks and legs, standards in general must be artificially maintained. A three foot standard rising from a low mat of green may be placed close to the house whereas a six to eight foot standard is often better placed out from the house at the corners of a square platform. As seen from the street one hardly realizes the change in location and, from within, it gives a pleasant enframement of the path. Standards of intermediate height are hopeless—too low for enframement and too high for decoration.

The third and most overdone shape is the columnar normally found in variety pyramidalis and in slow growing evergreens. The deciduous pyramidalis are too large for such a use and topiary work takes considerable skill. It is well to remember, how-

ever, that, though the slow growing material is easier to handle, any of our small flowering trees or tree-like shrubs can be maintained as pyramids, cones, or standards and this also applies to vines with a distinct trunk growth such as Wisteria and others. As with hedges the small leaved species show less injury from the shears.

Though these shaped plants may appear well by the entrance, we need much less distinctive material at the corners. Much too frequently does the individuality of corner planting actually distract our attention from the entrance instead of merely softening the corner and suggesting an enframement of the house. Hence a deciduous, often rather rounded amorphous shape is ideal and our attention is drawn to it only for the brief beauty of bloom or autumn color. Almost any of the better shrubs seem fitting provided that their branches sweep to the ground or their feet are hidden by a low ground cover. The location may be at A2, A3, or for larger growths at C2. Either as seen from the street or the gate they serve to lead the eye to the hospitality of the door.

The planting along the house (B) should be lower and quite uniform in texture. Lines of flowers, clove pinks, tulips, flax, and chrysanthemums may suit a Cape Cod cottage house or an even planting of myrtle and ferns a shaded site while a nondescript house with few pretensions to architectural charm might sport a row of Japanese barberries, or abelia where it was hardy. There is a certain tight monotony in evergreen planting unless bulbs break through the carpet at odd seasons and the change from green to autumn color, from flower to fruit is markedly to be desired.

The accompanying plan for this

sunny yard suggests solutions for three temperaments: the uninterested, those with taste but little garden enthusiasm, and those who plant in every available spot. The accompanying key to the planting suggests but one solution though its development may be budgeted for successive years. The ideal location would permit the use of box but alternatives are suggested for more northern winters. I would start with my foundation planting (A and B), add my hedge the following year, then my fence and finally, if my interest held, the herb garden to right and left. I have assumed that the house is attractively unpretentious and needs no screening of heavy vines or growth. Naturally box, and lilacs, and herbs sound both English and old-fashioned.

KEY TO PLAN—

A. Clematis, its color contrasting with the house: A1, Box (*Taxus* var. *repandens*); A2, Mock orange for fragrance; A3, standard lilac.

B. A trailing rose of suitable color, pegged flat and with lines of tulips and lilies bursting through in succession. Thyme (*T. serpyllum*) creeps in the crevices of the pavement.

C. A hedge of lilac or crape myrtle gives seclusion for my future garden or a low hedge of barberry or abelia may mark the edges of my plot at C1. Four old-time roses nod behind the picket fence and a pear tree (C2) pyramids towards the eaves.

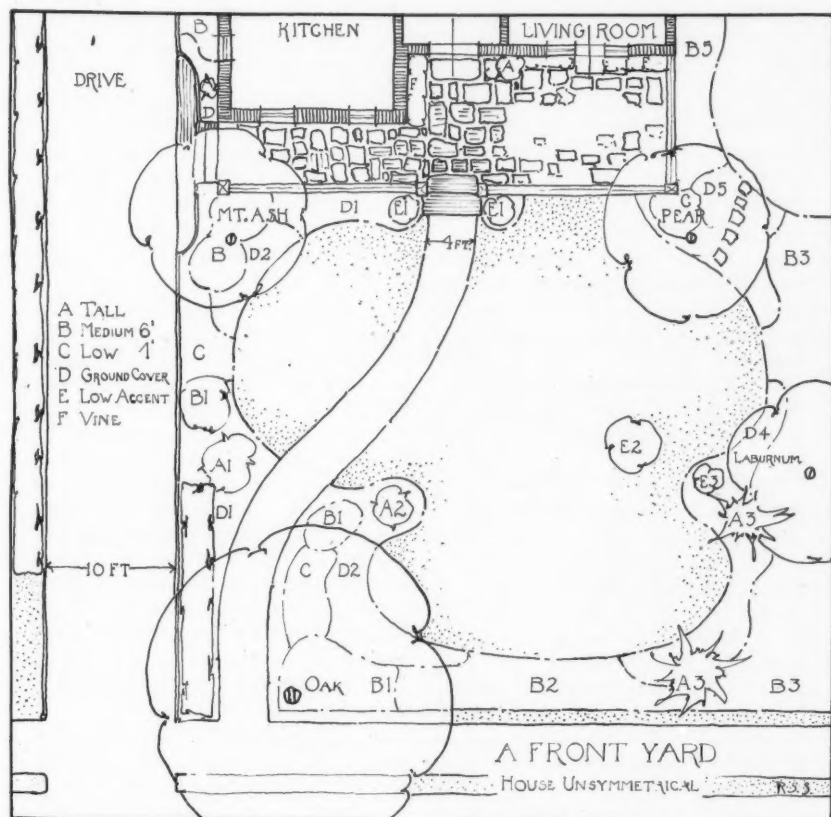
Nos. 1-9 are a final playful addition. The box-edged plots each have wee paths of brick or stone, and are planted with herbs for the most part as so many of them have winter interest. With the addition of bulbs and a few blooms we win succession of color—1. Wormwood and Tiger lilies peering through the fence; 2.

Marjoram, a green carpet for tulips; 3. Rings of chives rise from the mats of thyme that overlap the stones. (There are many low growing varieties of thyme, gold and silver, green, gray, and vivid lemon thyme.) 4. Sage, lavender, santolina, and hyssop in balanced groups of threes serve as a foil to clusters of *Lilium speciosum*. 5. Monarda rises high above the dying foliage of daffodils. 6. Accents of dark box (or hyssop) rise from a gay mat of *Nepeta mussini* and *Campanula carpatica* which though not herbs give color throughout the season and permit scattered driftings of the earliest bulbs. 7. A touch of marigolds. 8. A medley of greens—burnet, horehound, peppermint, sclary and burrage, things of interest rather than of beauty. 9. is the much used mint bed edged with parsley and with scattered plants of Sweet Rocket and Tansy giving touches of color in their season. We can spare no space that would be empty in winter for the many annuals, Dill, Sweet Basil, Coriander or Carraway.

A FRONT YARD—HOUSE UNSYMMETRICAL—

In dealing with the narrow front yard we can attain but little privacy from the street and the straight path leading to the door is the only reasonable solution but with a squarish area of yard seclusion is both practical and desirable and the straight approach is the least effective as it cuts our lawn directly into two parts.

Naturally the picturesqueness of the house with its side gable suggests informality of path, lawn, and enclosing shrubbery—a treatment that is, incidentally, inexpensive in maintenance. Assuming the presence of good loam the cost of small-sized quick-growing shrubbery is also inconsiderable where as the use of many



evergreens or the striving for immediate effect may run the cost up very decidedly.

The beauty of such an informal unit depends first upon the curve of the path and the pleasant bays and promontories of the lawn and secondly upon the varied interest of the enclosing planting which must adapt itself naturally to the area assigned. Overgrowth that requires shearing or encroaches to a fatal extent upon the lawn will ruin the careful alignment of our curves or the naturalness of

our planting. The curves must be laid out (perhaps with a length of hose) and adjusted to the irregularities of the ground, the promontories so placed that from no important viewpoint one can see the entire edge of the lawn unbroken. Just as when paddling on a lake or winding river we always seek what may be around the bend so should hidden bits of lawn suggest our "going-to-see" and thus suggest a greater spaciousness.

Though much of our planting must possess height to provide seclusion

the enclosure should not be definite (as with a hedge) but should suggest depth of planting and a varied shore line of high and low as the vegetation rises from the edge of our lawn-lake. A variety of seasonal interest is also a major consideration and color, texture, and the play of light and shadow must each play their part.

As in topography, attractive promontories whether steep or rounded tend to be high and the bays tend to be lower and shelving—in our planting often spots for colorful perennials. As in any design certain locations suggest a place for accent or enframement while others merely lead the eye to spots of greater interest. The first we solve by the use of specimens, the second by mass plantings.

The plan provides but one of the many possible solutions.

The exposure is westerly, the tall privet hedge to the north providing a screen from the neighbor. The only big tree is also to the north and will overhang the entrance path while three smaller trees possessing fruit or flower interest enframe the house or break the monotonous sky line of the shrubbery. Wherever possible high accents at A reinforce or take the place of height at B as seen from important view points on the terrace. An occasional low mass (C) adds interest and there remain many areas (D) where we may use evergreen ground-covers (as along the path) or a succession of perennials for seasonal effect.

AN INEXPENSIVE SOLUTION FOR THE NORTH—

Trees: Red Oak, its shade not too dense for the planting below; Mountain Ash for flower and fruit; the pyramidal form of a Bartlett Pear so

that the terrace will not be too shaded; a Laburnum or Black Locust (*Robinia*) for color.

A. Red Cedar, its pyramidal form silhouetted against the house; A1. another bushier specimen, a stopper for the low hedge; A2. Pfitzer's Juniper, a pleasant high sprawl; A3, two spreading evergreens preferably of the hemlock persuasion though they might be firs or spruces.

B. singly or in mass these provide privacy; B. *Euonymus alatus* (4 plants) for charm of foliage and twig and for brilliance of fall color and density of winter branches; B1 (1 plant) a shade-enduring honeysuckle, *Lonicera fragrantissima* with its early bloom and almost evergreen foliage; B2 (6 plants) a tight line Gray Dogwood with Virginia Creeper wandering through; B3 Forsythia and Elderberry (5 plants each), planted alternately, the latter leggy and late blooming, the former wide-spreading in the variety *intermedia* and early flowering; B4 (3 plants) Sweet Briar roses trained against the house.

C. Japanese Barberry (6 plants) densely warm in winter and colorful in fall.

D. Christmas Roses by the steps; D1. myrtle (*vinca*) along the path with daffodils peering through against the terrace wall; D2-3-4-5. associations of bulbs and perennials for succession of bloom, low and shade enduring at 4 and 5, bigger and showier at 2 and 3.

E1. Balanced clumps of *Rosa spinosissima altaica*; E2. an island of starry magnolia carpeted with the blue of *Scilla sibirica*; E3. a touch of azalea color to show against the hemlock. F. vines to suit the house and owner rise from rows of lavender and bulbs.

A SOLUTION FOR SOUTH OF WASHINGTON—

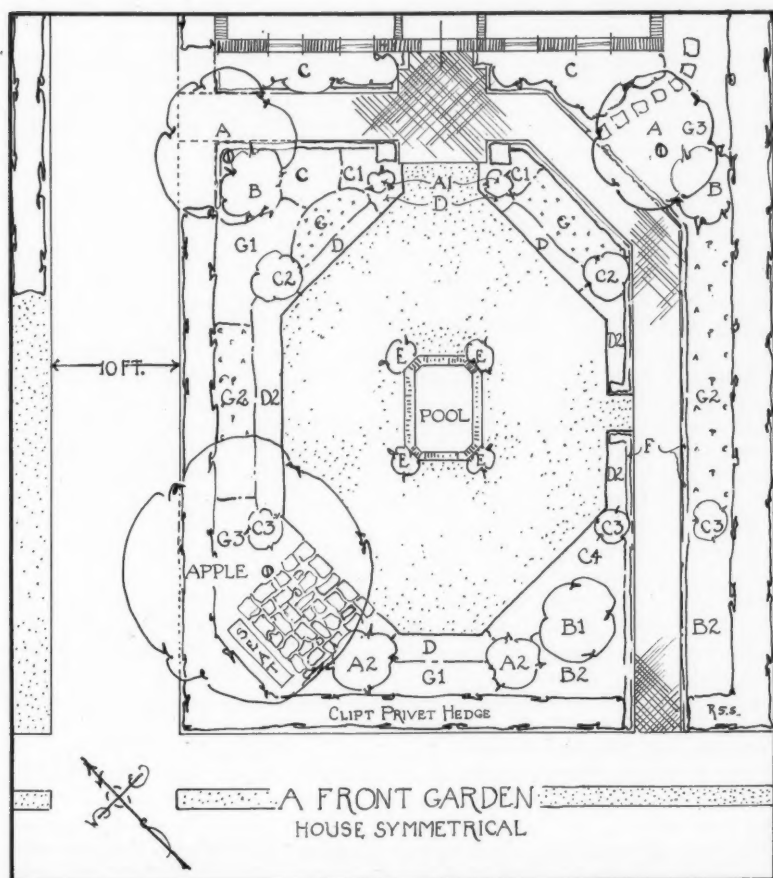
Trees: A big liquidambar for its brilliant fall color, a Japanese flowering cherry and Albizzia to enframe the house and Oxydendron rising from the shrubbery.

A and A1. Pyramidal and Spreading Yews; A2. *Azalea ledifolium album*; A3. Cedars of Lebanon with wide-spreading shade.

B. *Nandina* for fruit and texture; B1. *Lonicera Standishi*; B2. *Hibiscus syriacus* in tight array; B3. *Pyracantha* lit with the occasional white of clematis; B4. Roses Silver Moon and Jacotte.

C. *Abelia grandiflora* and the D areas variously disposed, though I should prefer simple masses of English Ivy by the path, of azaleas and jasmine.

E. Box. E1. *Magnolia stellata*



again; E2. the spreading dark green of *cephalotaxus*.

The hedge, whether high or low would be of evergreen privet and throughout the Southern planting broadleaved evergreens should predominate.

A FRONT GARDEN—HOUSE SYMMETRICAL—

Whether the symmetrical house be Colonial in feeling or non-descript it suggests immediately formality in plan, at least as we look outward, however subtle the treatment of the entrance path may be. Again we seek privacy (it makes the problem more difficult of solution) and again we consider first our winter effects despite the strictly garden pattern. The area between house and street, path and drive, is almost square—with the insertion of a terrace we would easily attain an octangular pattern and central pool but it has seemed more amusing to develop a seat beneath the apple tree that gives a bit of seclusion and is pleasantly off axis.

The accent plantings are balanced for the most part but only as seen from different points of view rather than as a foolish balance all around to be felt only on plan. As we enter through the break in the tall hedge only the edging of clipped *Euonymus radicans* or box symmetrically placed—the path itself turns, leading us onward, and the shadows beneath the cherry also lure. A few steps more and we catch a glimpse of the pool with perhaps reflections of the flowers beyond. There is nothing hard and fast in such glimpses and only as we look outward from the door-step between the pencil like Irish junipers (A1), note the neat spruces (E) by the pool and the rough mounds of Pfitzer's junipers (A2) is there a pronounced balance of planting. Even

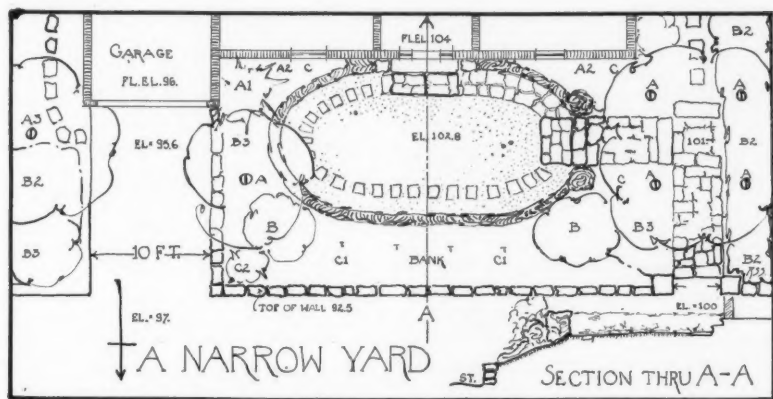
then the shaded seat is pleasantly distracting.

The house facade is framed between standards of *Prunus serrulata sachalinense*, the Sargent Cherry (A) which in some forms has a most delightful bronze in its new growths and brilliance of fall color in addition to its rosy bloom and close to the path are plantings of barberry with a tangle of rambler roses (C) (one rose to either side) of Japanese yew, the erect growing form (B) and the cheer of *Coton-easter horizontalis* (C1) in close contact with the junipers (A1).

An odd plant (B1) of *Spiraea tricarpa*, the latest of the Bridal wreaths to flower, stands at the gate, while nearby (B2) *S. prunifolia*, the earliest of all runs riot. *Juniperus* var. *Sargentii* (C2), Mountain Laurel (C3), Carolina rhododendron (C4) and touches of *Leiophyllum* (D) are all evergreen as in fact are the Clove Pinks (D1) and even the mixed planting of tulips and chrysanthemums (D2). It is hard to remember that many an edging plant and perennial has winter green even if a covering of pine boughs does not help us.

At G are dwarf polyantha roses that will appreciate such a cover, and at G1, 2, 3 are mixed perennials, tall sun-loving things; peonies, *cimicifuga*, with bulbs and annuals to the fore, and shade enduring little things—each to its proper site.

The specialist will perhaps find too little space for flowers in such a plan but let him grow his pets out of sight of the house where the lack of winter effect is not an eyesore. Another may think too much work involved but the planting is relatively permanent and once established you will be surprised at the slight amount of time it takes to pull a weed here or restrain a branch there—the grass plot has no unseemly irregularities to mow,



the paved or gravel path is neatly edged, and within the beds the planting will soon become so thick as to discourage the weeds—a noble desideratum for the lazy gardener and, incidentally, most naturalistic and lovely in appearance.

A NARROW YARD ON A SLOPING SITE—

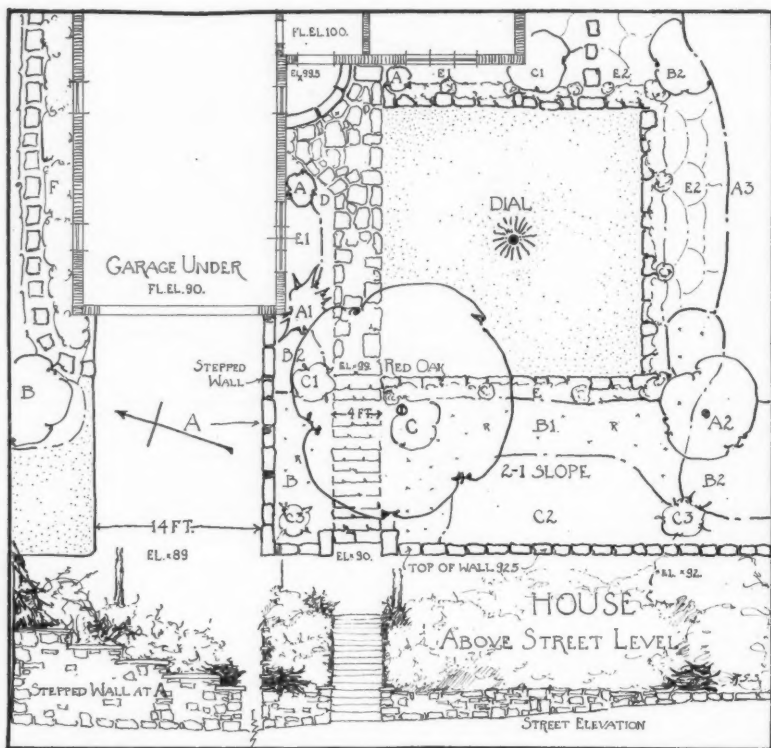
Often when the house is perched well above the street the mere mechanics of stepping up are difficult and the solution lies in zig-zagging the path, inserting landings between flights of steps. In this case the seven foot drop to the east permits entrance to a garage at the lower level and the four foot drop to the west permits an easy entrance. Incidentally it is well to remember that we tend to take out-of-door flights of steps more leisurely than indoor ones and that hence the risers should be less ($5\frac{1}{2}$ to 6 in.) and the tread proportionately more (13 in.) rather than the frequent 8-9 by 10-9 inches that is not too steep within.

The average difference in grade between the house and the street is too great to permit an even slope (even if

it would look well) hence the provision of a livably flat terrace, of a two to one (two horizontal to one foot vertical) slope and a retaining wall of varying height. With even a two foot hedge (preferably of the dwarf *Taxus repandens*) and a mixed planting of other yews and *Euonymus radicans* var. *vegetus* (C1) we are well shielded from the passer-by.

The path climbs up between forsythia (B3) (var. *spectabilis*) and privet (B2), turns beneath the white birches (A) and we look ahead at the hemlock (A1), birch, forsythia, and bush honeysuckle (B) (*L. fragrantissima*). There are nearby laurels (C) rising from a carpet of evergreen ferns, trilliums, mertensia, and early bulbs and we watch anxiously the slow development of hollies (A2) against the house.

It matters little what happens down by the garage but a red maple is lovely in spring and fall, and dense shrubs will screen the path to the rear. Such a path, as it adjoins the garage, might well be shaded by grapes held high on the lightest of supports. I have seen a lovely and most aged grape arbor, its posts a mere two inches square—



hardly matching in diameter the trunks of the grapes.

Please note that our house faces due north and there is little chance for flower color except from the plants of the forest floor.

THE HOUSE PERCHED HIGH—

With the house a good ten feet above the street we may live on one level in almost complete privacy and let the passer-by enjoy the view of the garage below and of a thickly planted bank—the world will look up to us.

To attain the greatest possible area of flat (without too expensive a re-

taining wall) we must climb a flight of steps unbroken by landings. A low edging of myrtle fends off the prickly bank-cover of mixed roses and barberry and finally we emerge from beneath the overhanging oak upon the garden terrace, its center marked with a sun dial set upon an old mill-stone.

But to return,—from the street a bush-honeysuckle (B) overhangs the service path. The stepped wall leading to the garage is lunged with forsythia (B2) (I wish we could grow jasmine in the north) and a rose, while an Austrian Pine (A1) and a low juniper reach outward. Then come the steps and further along our

old convenient friend the evergreen bittersweet (E1) shields the passer-by from the barberries and roses (B1).

From within the house we look out across a pleasant grass plot to a planting of big perennials, the bed sloping up to a thicket planting of *Aronia* and *Cornus racemosa*. The Chokeberry and Gray Dogwood offer a pleasing background in both winter and summer and also variety of fruit and flower. To one side is an English hawthorn (A2), its fruit hanging late (birds permitting) while to the other is a fragrant mock orange while elsewhere there are touches of evergreen in yew (C1) and juniper (C). Close to the step are pyramidal arbovitae (A) rising above a carpet of pachysandra (D) and in the beds against the house we strive for succession of bloom,—early bulbs giving way to low perennials and to aspiring lilies.

The edging of the flower beds is the crowning touch with its accents of lavender and varied display of odds and ends of rock plants swarming out over the wide flat stones. That there should be vines (F) against the house as well as against the garage goes without saying.

I think the plan presents a feeling of order and pleasing pattern despite the fact that its only symmetry is the centering of the dial in the turf panel and its placing on axis with one group of windows. All too often strict adherence to the rules of balance becomes obtrudingly obvious.

A DEEP FRONT YARD—

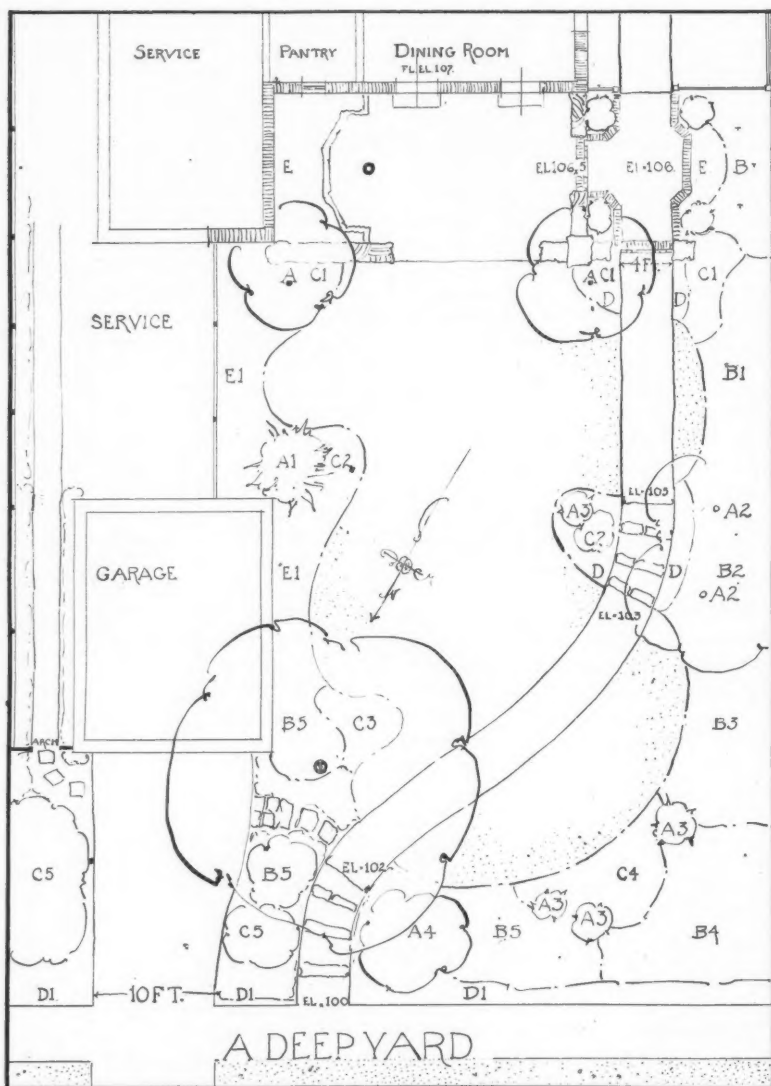
Where the house is set well back from the street, complete privacy is easily attained and the chief problem is in the subdivision of an area made even narrower by a side drive or the garage and service as in the solution presented in plan. That all planting

and paths (or drives) should be kept to the sides is almost a necessity as a straight long path appears even narrower than it actually is and leaves too restricted areas on either side for a good appearance.

The development of a terrace close to the house becomes a first thought even though it is merely a breakfast terrace as in this plan. This shortens our area desirably and if there were marked changes in grade we might insert a squarish garden near the terrace rather than developing the whole front into an informal lawn. The location of the garage is to the north (incidentally it abuts of the service—a desirable point) and the location of the entrance was influenced both by the need of access to the garage and the fact that the stores were to the northeast while the front door was to the southwest. These locations permit a pleasant curving path leading up the slope and the variation in slope suggests the introduction of steps with plantings about them.

But a few points in the planting need comment perhaps. As usual the lawn offers pleasing lines of bay and promontory, the planting on the headlands tall enough to hide what might be beyond. Against the garage and service lattice, vines are trained to permit the largest possible area for our flowers. Winter interest in fruit and twig as well as in evergreen has been emphasized and the very early flowering slender *Prunus Davidiana* adds unusual interest as it is even earlier than the weeping cherry and yet does not make too large a tree. If the planting were in a limestone section euonymus or evergreen barberries should be substituted for the Mountain Laurel and azaleas.

It is well to remember that in a front yard of these general proportions the first decision as to how it



should be sub-divided is the most important thing.

Key to Planting

A (over 8 ft.), *Prunus Davidiana*,

a slender standard tree blooming in earliest spring; A1, a sun-loving evergreen (a place for a blue spruce if you must have one); A2, witchhazel, and I should like to mix American

and Chinese for their different seasons of winter bloom; A3, Red cedars in varying shapes and heights; A4, *Euonymus alatus* and you should start out with a good big one as it screens the entrance.

B (6-8 ft. for screening), Japanese yew and as large plants as you can afford; B1, *Weigelia* would be lovely; B2, *Viburnum cassinoides*, not thrilling but a good filler under the witch-hazel which should arch the path; B3, the red-twigged cornel; B4, Multiflora roses planted for their winter fruit even more than for their bloom—var. *cathayensis* is a delightful blush variation; B5, the dark *Forsythia* var. *specabilis*.

C (low shrubs, *Leucothoe Catesbaei*, rich bronze in winter and always graceful; C1, green-twigged ker-

ria; C2, the Scotch rose var. *altaica*, a lovely thing; C3 Mountain Laurel; C4, Flame azaleas interplanted with daffodils and *Phlox divaricata*; C5 *Stephanandra* for its attractive foliage and density of habit.

D (ground-covers), a variety of woody things, evergreen ferns, mertensia and the like; D1, one of the stand-bys, pachysandra, vinca, or English ivy, which ever will thrive best.

E (flowers planted for succession—your own selection), spring bulbs and annuals and a careful picking of perennials with good foliage is best adjoining the terrace; E1, big sun-loving perennials, the effect heightened by climbing roses and clematis behind; at the northern side of the shrubbery one might add many spring flowering things but there are relatively few sunny spots after the leaves come out.

Nut Culture in the Northeast

By C. A. REED

If you were to telegraph to some qualified authority for a ten-word picture of the present nut growing situation in the Northeastern States, you would probably receive an answer something like this: "Past failures many—successes occasional—times changing—industry going forward."

If you should want more details and should request a fifty-word night letter, you might get this: "Two centuries with foreign species made little forward progress—Two decades with natives has apparently placed industry upon sound pioneer basis—Test orchards of grafted trees in rich soil bearing young as apples—Use of kernels in manufactured foods steadily increasing—Prices

moderate—Industry promises fair returns under right conditions."

Neither of these answers would satisfy one who seriously considers going into nut growing. Both indicate that, under favorable conditions, a moderate margin of profit may be expected but what those conditions are is what the prospective planter wants to know, and "Will it pay to try to meet them?" Before going further, let us determine just what kind of a planter it is that wants to know. If it is a coldly calculating investor, interested only in placing money where dividends are practically certain, and the question is how great the profits will be rather than whether there will be any return or not, there will

be no use in going further. The sooner the matter is forgotten the better. On the other hand, if it is a land owner with seedling nut trees of one or more edible species already growing thriftily along fence rows and other places on the farm, the situation may be quite different. Any such person who wishes to derive revenue from all possible sources may well consider nut growing. With little expense he may derive enough cash income to pay interest on mortgages, taxes, or other items where cash only is acceptable.

A class of amateur planters usually omitted in considering parts played in agriculture, yet which is oftentimes of incalculable value in experimentation and which has long been of leading importance in nut growing, is that of business men, doctors, lawyers, college professors, and others who seek new lines of agriculture as a form of diversion in preference to golf, yachting, baseball, shooting, and the like. Such men often find recreation in managing a farm. They seldom care for doing the same thing poorly that farmers in the neighborhood are doing better than they can hope to do. They want something new, something unusual, something that won't perish from off the earth if left alone for a few weeks or months, yet which, without being burdensome in labor or cash, will make the farm more valuable year after year. These men are often real leaders in local agriculture. They are usually assets to any community, either by showing how to do or how not to do. As recently as a quarter of a century ago, such men were among the main leaders in Persian (English) walnut culture on the western coast and in pecan

growing in the South. It would be hard today to find an orchard of black walnut, chestnut, or other kind of nut tree in the Northeast having as many as 500 trees that has been planted by a man of any other class. In some respects, these men are more important to pioneering in nut culture than farmers who, not being able to take risks, must feel their way by planting small numbers of trees and eternally play safe. They plant large orchards, test varieties, try scores of minor new ideas, and do other things wholly beyond the financial reach of the farmer. This class of planter is vital to the northeastern nut industry. May their tribe increase!

But why does the night letter say that foreign species have failed in the Northeast? There are three reasons: lack of hardiness, natural enemies, and inferior varieties. The kinds first tried were: Persian (English) walnut, almond, filbert, European chestnut, Japanese chestnut, and Japanese walnut.

Persian walnut, *Juglans nigra*, Linn.

The Persian walnut is not an entire failure in this part of the country as there are thousands of trees, usually growing singly or in small plantings of less than a half-dozen, in dooryards, and home orchards throughout various parts of the East. They are usually in peculiarly favorable sites about the lower Great Lakes in Michigan, Ohio, Pennsylvania, Ontario, western New York, and in protected positions east of the Appalachian Mountains, especially between Long Island Sound and Norfolk, Virginia. They apparently prefer neutral or moderately acid soils to those in which blueberries, rhododendrons, and the like,

thrive best. They are especially common in southeastern Pennsylvania, northern Maryland and the District of Columbia. The greatest apparent trouble with this species in the Northeast is due to its responsiveness to mild temperatures in winter and early spring. At such times its sap begins to flow and its buds swell. Extremely low temperatures which sometimes follow catch the trees wholly unprepared. The tops are easily killed back and very often the trunks are injured by splitting the bark. This walnut is sometimes truly said to be as easily injured by freezing as the sweet cherry, but this is not the whole story. The Persian walnut is more sensitive to frost injury than the sweet cherry and less able to recover. Also, it tends to grow late in fall without properly maturing ahead of winter freezes. Old trees in this part of the country without large scars due to destructive freezing are hard to find. A safe general statement regarding the Persian walnut in the East would probably be that to every living tree that can be found today, a dozen or perhaps a hundred have undoubtedly perished in the same neighborhood. Certain it is that, in 1933, there is neither an important Persian walnut orchard industry in the East, nor any visible prospect of there being one within the near future. In spite of all this, it is a splendid tree to have wherever and whenever it does well.

Almond, *Amygdalus communis*, Linn.

The story of the almond in the North is short. No one now knows how generally it was planted here when the country was young, but the chances are that it was thoroughly tested long before it was taken to California. Because of its

close relationship to the peach, it is often assumed that it should do well in similar locations. This, however, is sadly untrue, as, except for an occasional seedling of the hardshell type with kernels scarcely more edible than peach pits, there are no almond trees to speak of east of the Rocky Mountains. There are occasional trees in Texas, Oklahoma and Arkansas, but no orchards and no important crops of nuts. This is in spite of the fact that the Texas (Syn. Texas Prolific) variety, one of the best known in California, is supposed to have originated in the state whose name it bears.

In this country, almond growing is commercially successful only in certain favored regions of the far west. These are chiefly in the interior valleys of California, where there is minimum danger of destructively low temperatures following the blooming season. With early varieties in some instances this often begins in January, and with late varieties may extend into April.

Filbert, *Corylus avellana*, Linn.

The story of the European filbert in the Northeast is somewhat different although, like the others, it too has had its extremely low ebb. It has had at least three reasons for doing so. The plants blossom in late winter and the flowers are frequently destroyed by severe temperatures occurring in February, March, and early April. The varieties planted were of European parentage and fatally subject to a fungus disease everywhere harbored by the largely resistant native species; and the plants whose flowers were not killed by freezing temperatures and were not themselves destroyed by the fungus, simply failed for some other reason to bear paying

crops. However, less than fifteen years ago, renewed activity with the filbert was begun along more enlightened lines and today the situation looks encouraging. Of this, more will be said later.

Chestnut, *Castanea spp.*

The European chestnut, *Castanea sativa*, Mill., came into this country about 1800 or earlier. It was never considered as comparing favorably with the native American sweet in palatability. Its redeeming features were due to its greater prolificacy and larger nuts. During the eighties, seedlings began to appear which produced nuts so superior to the average of their kind as to suggest hybridity with the American sweet, *C. dentata*, Borkh. These were given such variety names as Paragon, Numbo, Ridgely, and others, and extensively used both in the nursery and in top-working coppice sprouts from cut-over chestnut forest lands. The trees bore heavily but natural enemies proved insurmountable. Few nuts were ever marketable due to weevil infestation. Then came the bark disease and destroyed the trees with the same, although slower thoroughness which characterized its attack upon the native species. No European chestnut trees are now planted in regions where the native species grew as a forest tree.

The Japanese chestnut, *C. crenata*, Sieb. et Zucc., was first brought into this country about three-quarters of a century ago. It was both more precocious and more prolific than its European cousin. Also, the nuts were larger and the species more resistant to the bark disease. However, except when especially prepared, the nuts were ordinarily not sufficiently palatable to appeal to the taste and they have never en-

joyed particular popularity. With the American sweet and the European chestnuts both gone because of blight, the weevils took to the Japanese species, probably because it represented the only food left.

Japanese walnut, *Juglans sieboldiana*, Maxim.

The Japanese walnut came into the United States at about the same time as did the chestnut from the land of the Rising Sun. At home it had been so lightly regarded by the Japanese that it had not been cultivated, yet we undertook at once to incorporate it prominently among our orchard products. Trees and seeds were planted from New England to California and from Florida to the Pacific Northwest. The only trees available were seedlings. These proved exceedingly variable, some producing one type of nut, some others quite distinct, and some intermediates. Some produced nuts practically indistinguishable from native butternuts, although the kernels never possessed as rich quality or as pleasing flavor. Most of the earliest trees planted have now disappeared and there is no longer special interest in seedlings of this species. However, the last two decades have brought forth certain varieties chosen from one of the types and called "heart-nuts," because of their heart-like form. A limited amount of experimental planting is now taking place along lines of more modern horticulture.

NATIVE GENERA AND SPECIES

During the past 25 years—more or less—much interest has developed in certain native species indigenous to this part of the country. Not that foreign kinds have been finally and completely abandoned, but that

many contributing factors have combined to lead in that direction.

Of the native species which now appear to give promise for orchard use, the black walnut, butternut, shagbark hickory, shellbark hickory, sweet pignut or false shagbark, and the pecan, and possibly intermediate and hybrid forms, must be considered for use in some parts of the Northeast. Definite progress has been made with each of these species during recent years.

Black walnut, *Juglans nigra*, Linn.

The black walnut has received more recent attention at the hands of pioneer nut planters than has any other species. This is because of the greater range of area to which it is indigenous, and the fact that an important market for its kernels has long existed. Nurserymen are propagating a half-dozen or more varieties and thousands of trees are yearly being set out, mostly in small lots of a half-dozen or so. As stated in the night letter, the trees are capable of bearing their first crops quite as young as apples. However, the soil must be fertile and of the right general character for the trees either to grow or bear satisfactorily, and at best as the trees grow older, they show marked tendencies toward alternate bearing.

As with every other form of orcharding, there are numerous known drawbacks to growing black walnuts. These are not pleasant to contemplate, but they should not be deliberately overlooked. For instance, the trees are subject to summer defoliation by the familiar walnut caterpillars. Without leaves during the latter part of the summer, the trees are able neither to develop plump kernels within the nuts already on their branches, nor to

store up material within their buds for a crop the following year. Another drawback is the difficult and extremely disagreeable task of removing hulls from the nuts. There is also difficulty in cracking the shells and extracting the kernels in pieces large enough to command first prices. Again, a factor which must not be discounted too lightly in connection with the black walnut industry is the crop from native trees. As the demand increases, the crop is yearly being more carefully gathered. Coming as it does in small quantities from thousands of farms, there are no standards of grades and prices vary accordingly. The very uncertainty of size or condition of this crop is demoralizing to the market. However, these factors are no more numerous or serious than are those connected with other agricultural projects and none should be taken too seriously. Some are already being overcome.

Butternut, *Juglans cinerea*, Linn.

The butternut has yet received no great amount of attention in so far as development of varieties or production of grafted nursery trees are concerned. It grows farther north than any other member of the walnut family, out-distancing the shagbark hickory in New England and the black walnut west of Lake Michigan. It enjoys much popularity in New England. It is hard to graft and practically no varieties can be had from nurserymen at this time, although a dozen or more have been named and propagated to some extent. There are no known orchards.

Nuts of this species are among the most palatable of any produced by native species. As the range is much more restricted than that of the black walnut, there are fewer trees. Production is therefore less and it would

seem logical that the market will be less likely to become saturated. In all likelihood, it will be but a matter of time before there will be orchards of grafted butternut trees, especially in the extreme northern points.

Shagbark hickory, *Hicoria ovata*.
(Miller) Britton.

The shagbark, the choicest of the native hickories, except the pecan, bears the partially deserved reputation of being hard to graft, difficult to transplant, slow to grow and, in so far as the kernels are concerned, not greatly in demand. Under certain conditions these points are all conceded. In comparison with the apple or peach, the shagbark can not be called easy to graft or transplant, but they are much easier than butternut and Japanese walnut. In these respects, they are about like the black walnut. Here, as elsewhere, the term "easy" is relative only. To one who knows how and is willing to take pains, shagbark hickory grafting and transplanting are not particularly difficult. Experienced propagators soon learn the art of successful hickory grafting, and when properly planted in the right kinds of soil, the trees grow rapidly and come into bearing much earlier than is supposed. Neither objection should be taken too seriously by any earnest person who wants to grow the shagbark hickory.

In so far as a demand for the kernels is concerned, much depends upon local tastes. At present, the demand is greater for black walnut kernels which have greater power of imparting flavor after being cooked.

Shellbark hickory, *Hicoria laciniosa*
(Michx. f.) Sargent.

The shellbark hickory, closely related to the shagbark but much more limited in range and producing nuts of three or four times the size, is not

now cultivated to any extent upon a variety basis. In fact, not more than three or four varieties are known to have been named. Good shagbarks have a delightful flavor all their own, for which they are very much worth while.

Sweet pignut or false shagbark, *Hicoria ovalis* (Wangenheim) Sudworth.

The small pignut or false shagbark is nearly as palatable as the true shagbark, which it closely resembles, but has received little attention thus far by those who are bringing out new varieties with many other species. However, there is no reason why its time should not come.

Pecan, *Hicoria pecan* (Marshall) Britton.

The pecan is generally rated as America's choicest native nut. In the Northeast it is of interest as a nut producer only in the lower north. A dozen or more varieties have been used in experimental orchards for approximately two decades, but it remains yet to be proved that pecan trees are capable of producing paying crops at latitudes as high as that of the District of Columbia, Vincennes, Indiana, and St. Louis, Missouri, except possibly to a limited extent on the Chesapeake Peninsula of Maryland and with certain varieties only, near the Mississippi River north to southeastern Iowa. At other northern points the pecan has little value other than as an ornament in the landscape. In this latter capacity it is well worth considering wherever the soils are rich and reasonably moist, yet well drained, at points much farther north. At its best, it is unsurpassed in beauty by any other deciduous tree. It is undoubtedly the largest-growing hardwood species of this country.

OTHER SPECIES, FOREIGN AS WELL
AS NATIVE

Chinese Hairy Chestnut, *Castanea mollissima*. Blume.

Aside from the several species so far discussed as having apparent possibilities of proving profitable when rightly handled, there are a few other forms believed to have their potentialities, although not necessarily in the immediate future, for the reason that trees for planting could become available for general planting within probably another five years. One of these is the Chinese hairy chestnut. This is the only chestnut yet brought into this country having as good flavor as the native American sweet. Many of the nuts are fully as sweet as the finest of our home chestnuts. In addition to this, they are often as large as the average European chestnuts; and, what is more important, they are highly resistant to blight. These were first brought to public attention in this country by the Department of Agriculture about twenty-five years ago. Wide distributions of seed have been made. Hundreds of bearing trees since reported are being surveyed with the result that many selections have been made for reproduction by grafting and test in varietal orchards. These will not be in the hands of nurserymen until after several years of further observation by experts. However, nurserymen are already offering seedling trees of this species which should be suitable for conservative planting within the chestnut zone. When these come into bearing, some will probably prove worth retaining. By that time, scions from more promising kinds should be available with which to top-work the inferior trees.

The Chinese chestnut is as subject to weevil infestation as other species, and as the weevil is as completely uncontrollable now as at any time in the

past, this phase of the situation must be considered. It should also be borne in mind that no species of chestnut yet found is altogether resistant to blight. It must be expected that, regardless of species, there will be a certain percentage of mortality. More than this, by way of further warning against too great expectations, the Chinese species is too new in this country for much knowledge to be had regarding its bearing habits. Most trees longest under observation have been light to moderate bearers.

Filbert hybrids.

Still another form of nut tree believed to have important possibilities is one already referred to in the filbert discussion. It is a hybrid form resulting from artificial crosses between the native roadside species of American hazel, *Corylus americana*, Walt., and certain of the leading varieties of European filbert, *C. avellana*, Linn. The work of making crosses of this sort was begun in 1919 by the late J. F. Jones of Lancaster, Pennsylvania, and taken up by the Federal Department of Agriculture in 1927, one year before the death of Mr. Jones. Mr. Jones made crosses between the Rush variety of American hazel as the pistillate (or nut producing) parent and such European varieties as Barcelona, Italian Red, Cosford, Bolwyller, and probably some others. The Department has used other parents on both sides but none of its plants are yet in bearing.

The first of the Jones plants came into bearing in 1924. Mr. Jones discarded several hundred of these within the next three years, but reserved about equally as many for further observation. Of these, and of a later lot which have come into bearing since his death, a considerable number are now under close scrutiny.

As a group, the Jones hybrids are

more hardy and prolific at Lancaster than are the European varieties. The mixed nuts from the hybrid trees sell readily at fair prices in local markets in competition with imported nuts. As would be expected, both plants and nuts are variable in character. The largest are fully as large as the average of those imported from Europe; the majority are somewhat smaller. The choicest nuts have remarkably clean kernels when removed from the shells and after proper curing are of pleasing palatability.

These hybrids have not yet been propagated to such extent that trees of the most promising kinds are available for general planting. Such sale as has taken place has been of layered plants from what Mr. Jones himself had layered and which became ready for sale subsequent to his death. They were later sold as Jones hybrid filberts, without reference to the exact parentage of individual plants.

If this word picture of the northern nut orcharding situation is clear, it will readily be seen that the industry is well launched in the midst of a period of experimentation. Progress is being made with many species representing a considerable number of genera. Quite a few varieties are available for test planting but no large number of trees of any kind can be had from nurseries. Obviously, it is upon the nurserymen that the majority of persons must rely for trees suitable for planting, although in special cases a few may produce their own. Unless nurserymen have the trees to sell, not many will be planted. On the other hand, the nurserymen can not afford to grow large numbers of trees without an active demand. The two must go forward together, that is, production of trees in the nursery,

and orchard planting necessarily go hand in hand.

SIZE OF PLANTINGS SAFE TO PUT OUT

Last September the executives and certain leading members of the Northern Nut Growers' Association met at the country home of Mr. T. P. Littlepage, near Bowie, Prince George's County, Maryland, for an executive session immediately preceding the annual convention of that society. One of the matters which they discussed was how generally that society could officially endorse large plantings of nut trees. It was decided that, except for purposes of experimentation, this could not be recommended. All agreed that it was highly desirable upon the part of the Federal and State Departments of Agriculture and Experiment Stations, and by individuals having the means and inclination, but that a few dozen trees were all that should be planted by farmers dependent upon the land for income. For the present, it was felt that the farmer and the small lot owner might well afford to plant up to twenty-five or thirty trees of kinds procurable from the nurserymen. When these come into bearing, he will soon be able to decide whether to increase his plantings or not.

The same sentiment was strongly expressed by Prof. F. N. Fagan of State College, Pennsylvania, in a paper read in Harrisburg, January 19 of this year, before one hundred members of the newly organized Pennsylvania Nut Growers' Association. It has been the persistent stand of the Federal Department of Agriculture, as well as of each of the state institutions which have so far gone on record in any way.

Saxifrage Notes—IV

BY FLORENS DEBEVOISE

DACTYLOIDES SECTION

(Mossy Saxifragas)

This section probably derived its name from the moss-like effects produced by the emerald green mats which are formed by these plants. They are sub-alpine species found usually in woodland. In spring their beautiful masses of green are bespangled with charming flowers rising on stems from four to eight inches and ranging in colours from white through pink to dark rose and red. They make better growth in shade than in sun, though contrary to the proclivities of the encrusted section they seem to enjoy the early morning sun, and if they have about three hours of this they appear quite flourishing. The soil should contain a liberal amount of leafmold or humus well mixed with sand and garden loam. Moisture is a real necessity. During the early spring they make good growth and a dazzling display, but when the flowering period is past trouble begins for the gardener, for they will turn brown and die out in the center. Whether this is due to exhaustion from so much bloom or because of summer heat no one seems to know; however, in spite of this one defect they are well worth growing and their ailment is easily remedied by clipping away the brown leaves and giving the plant a good top dressing of leaf soil mixed with well rotted cow manure and sand. Top this off with pure sand and by autumn the plants are normal in size and beauty once more.

They are easily propagated by cutting or division and come readily from seed. Their hybridizing tendencies are

quite as marked as those of their relatives in the Euacizoon section.

The following notes include many which have proven a success in this country and no doubt there are many varieties still to be obtained from abroad, which will add beauty and charm to our rock gardens, wall gardens and borders.

CERATOPHYLLEAE OR STAG'S-HORN ROCKFOILS

The members of this group have foliage resembling miniature stag's horns as for example *S. trifurcata*.

S. CAMPOSI

Sometimes confused with *S. × Wallacei* though its habit is dwarfer, making compact mat cushions of three lobed leaves, and the white flowers are smaller. It blossoms in May and June. A native of Spain.

S. CUNEATA

Is another Spaniard. A vigorous growing plant forming cushions of broad cuneate leaves which at the top are deeply cut into three lobes. The large white blossoms are borne in eight inch panicles in early spring. This plant should be sheltered from the North and East winds during the winter.

S. MAWEANA

Was introduced from North Africa in 1827. Farrer mentions it as a "rare treasure." The leaves are three cleft to the middle and the two side lobes again divided. The lovely white flowers are almost an inch in diameter and occur in great profusion in May and June. It should have some protection in winter.



Donald F. Merrett ©

*Saxifraga Wallacei**S. TRIFURCATA*

A native of Northern Spain producing a rich green carpet of rosettes. The stiff, thick little leaves are three cleft and more glaucous than the type. The white flowers are loosely borne on branching panicles completely covering the plant with bloom. It makes rapid growth and will endure more sun than other mossies.

S. WALLACEI

An orphan without pedigree or country; nevertheless of outstanding merit. The white flowers are very large and fragrant, freely produced in branching sprays six inches high. The leaves are somewhat larger than other varieties and of a light green, five

cleft. The flowering shoots are reddish.

EXARATEAE

There are only four species in this group, some with mossy tufted habit and others with more rigid foliage.

S. EXARATEAE

The habitat of this interesting and beautiful plant extends across the European Alps and from the Pyrenees to the Balkans. The leaves are three lobed and rather blunt. Its masses are covered with white flowers on two to three inch thick wiry, branching stems held rigidly erect in early spring.

The three other species belonging to this group are *S. mixta* from the



Donald F. Merrett ©

Saxifraga decipiens

Pyrenees, a small tufted plant not often seen in gardens; *S. obscura* and *S. pubescens* also from the Pyrenees and seldom seen in cultivation.

CAESPITOSAE

This group contains Mossy Saxifragas of larger habit of growth including the red flowered varieties. The hybridizers have been busy with this group in recent years, their efforts resulting in many beautiful highly coloured forms; *S. muscoides* var. *atropurpurea*, a small plant with little red flowers, being used as a parent.

S. CAESPITOSA

This variable species wanders over the Northern and Arctic regions. Its crowded tufts of dark green foliage covered with short glandular hairs quickly cover large spaces when grown in more temperate climates. White

flowers appear on four inch loose terminal clusters in early summer.

S. DECIPIENS

Hails from the Northern European regions. A plant of vigorous habit; large flowers on taller stems than the type. A parent of many of the finer coloured mossies. A mossy with a good disposition in sun or shade.

S. IRATIANA

A small dense tufted mossy from the Pyrenees where it is found at high elevations. The rosettes are similar to *S. caespitosa* in miniature form. The white flowers are produced on two inch stems in summer. A late flowering saxifrage is always of value in the rock garden.

S. NEVADENSIS

Another Spanish Mossy from the

Sierra Nevada Mountains, rather similar to the above, but larger in all parts than *S. iratiana*.

S. SPONHEMICA

A native of Northwestern and Central Europe. A plant varying between *S. caespitosa* and *S. decipiens*. White flowers in loose panicles in early summer.

GERANIOIDES

This group contains species having larger and coarser foliage than those of the groups already mentioned.

S. AQUATICA

From the Pyrenees where it is found in abundance along the edges of streams. Its showy white flowers in July wave about on stems from twelve to fifteen inches tall. The leaves are glandular and hairy, divided and cleft into many segments. A moist stony root run in shade suits its needs.

S. GERANIOIDES

Named for the Geranium which it does not resemble. A native of the Pyrenees in cultivation since 1770. Dense tufted rosetted form. The stems are eight inches high bearing large corymbose heads of white flowers in July. The flowers are fragrant though half closed. The long narrow segments of the calyx are a peculiar characteristic.

S. PEDATIFIDA

From Southern France is classed as one of the finest of the large cushioned mosses. A profusion of white flowers on stems six inches high cover the emerald cushions in May and June.

S. PEDEMONTANA

A fine mossy coming into cultivation in 1824. Found in the Alps of Piedmont, in the Pyrenees and in Switzerland, usually in granite formations. The ample rosettes have thick

rather succulent three lobed leaves which are strongly nerved. It is tap rooted, so particular care should be given as to drainage. A crevice with a downward slope to avoid too much moisture in winter best suits its needs. The branching stems carry sprays of large white flowers in April and May.

HYPNOIDEAE (HYPNUM-LIKE)

S. hypnoides is the type for this group whose members are smaller than those of the preceding groups.

S. AJUGIFOLIA

A prostrate miniature mossy from high elevations of the Pyrenees. The leaves are five or seven cleft and fine and thin in texture. These appear on the prostrate shoots which are about four inches long. A distinguishing characteristic of the plant is that the flower stems ascend from the axils of the lower leaves on the shoots—"a thing that happens in no other mossy Saxifrage except *S. perdurans* (which has blunt leaf-segments instead of sharp ones)"—Farrer. The flowers are white. It requires moisture and shade.

S. ERIOBLASTA

Another Spaniard from calcareous regions of Granada. A tiny mossy of rosetted form; flowers pink or white on two inch stems appearing in May and June.

S. GIBRALTARICA

An interesting species found in Southern Spain. Similar in habit to *S. erioblasta* and often confused with *S. conifera* on account of the cone-like buds which occur in the axils of the leaves. White flowers on three inch stems in May and June.

S. Globulifera (S. granatensis)

A Spanish mossy forming mats of densely packed rosettes. The leaves are broader than *S. gibraltarica* and

three lobed. The buds have similar cone-like effects. Small white flowers are borne in great abundance on five inch stems in May and June. An easy doer.

S. HYPNOIDES

The well known "Dovedale Moss" makes most lovely green carpets in the rock garden, the rich green making an effective display during all seasons of the year. It has a long blooming period through spring and part of the summer when it is covered with white flowers on stems nine inches high. It grows rapidly. There are many varieties of the type. One of the best is *gemmifera*, also sent out by var. *Kingii*.

MUSCOIDEAE

The smallest species of mossy Saxifragas are contained in this group. These require the same culture as those already mentioned.

S. ANDROSACEA

Resembles certain types of androsaces. It is found in the Carpathians, Alps, Pyrenees, Siberia and Arctic regions. A beautiful species forming loose rosetted cushions with white flowers on three inch stems. It requires a peaty soil and moisture.

S. MUSCOIDES

It is a dense growing little dwarf mossy distributed throughout the Alps, Pyrenees and Balkans. Its tufts are barely an inch in height, composed of narrow bright green leaves. Var. *atropurpurea* produces a mass of red flowers and is the source of all the red flowered hybrids among the mosses. Var. *moschata* is taller and has white flowers.

MOSSY HYBRIDS

Numerous beautiful varieties of the mossy saxifragas have resulted from hybridization in these groups. It would be impossible to mention more than a few in these notes.

S. X ARKWRIGHTII

A tall growing variety having large white flat blooms freely produced.

S. X BAKERI

One of the smaller sorts; compact tufts of bright green, and charming crimson flowers.

S. X BATHONIENSIS

A splendid variety, spreading rapidly and producing a profusion of fine large scarlet flowers.

S. X CLIBRANI

Is smaller and more compact in habit than the last with large red flowers on reddish branching stems.

S. X DECIPIENS GRANDIFLORA

One of the loveliest as well as the easiest of the mossies. The flowers are fairly large, rich deep rose colour fading to pale pink. The shaded effect is lovely when the plant is covered with blooms.

S. X DITTON CRIMSON

Almost identical in form and flower to the above.

S. X GUILFORD SEEDLING

A general favorite, the bright green carpets being almost entirely covered with charming crimson flowers over a long blooming period.

S. X SANGUINEA SUPERBA

Supposed to have the finest flowers of all the red flowering mossies.

What I Have Done in Nut Growing and Why I Am Interested

BY DR. J. S. RITTENHOUSE

*Read before the Pennsylvania State Nut Growers' Association, Harrisburg, Pa.,
January 19, 1933*

More than twenty years ago, the late J. G. Rush of Lancaster County, Pa., and I met casually in the lobby of a hotel. I soon found him enthusiastic about improved varieties of nuts and the best way to bud and graft the trees. My introduction to Mr. Rush was also my introduction to nut growing. In this State Mr. Rush was a pioneer in the art of nut tree budding and grafting and had a larger percentage of successes than any one before him. I met him a number of times after that. He had an interesting collection of nut trees on his home place in the outskirts of West Willow, several miles south of Lancaster, where many of the trees were then in bearing.

It was largely due to the influence of Mr. Rush that the late J. F. Jones was induced, in 1912, to come from Louisiana to Lancaster County, this State, here to establish a northern nut tree nursery. In 1915 I became acquainted with Mr. Jones at his home, two miles from West Willow. From him I became so enthused that, in 1916 and 1917 I planted northern pecan and Persian (English) walnut trees on land which I own in Berks County. I have since found that neither of these kinds should be planted, with the hope of getting a profitable orchard, under environment such as prevails in my section. A few trees, from which to get nuts for home use and as novelties are all right. The pecans did not bear until a few years ago. They bore fewer

than a dozen nuts altogether in any one year previous to 1932. That year two pecan trees together bore 9½ pounds. Several others planted in 1917 have not yet fruited. The nuts from the bearing trees are not as large, nor are the kernels as plump as those grown in the South. Pennsylvania appears to be too far north for pecan growing to be profitable.

Persian (English) Walnuts

The Persian walnut has also been a misfit with me. The soil in which my nut trees are planted is of the Birdsboro silt loam. It is heavy, with a rather tight subsoil. It is not of limestone derivation. Berks County has large areas of limestone soil and this walnut would perhaps do better on that kind of soil than it does on mine.

There seem to be two types of Persian walnut. Some varieties vegetate much earlier in the spring than others. Those that start to grow late in the spring do not make as much growth during the season as those which vegetate earlier. Some of the late vegetating varieties planted sixteen years ago are not yet more than 6 feet tall and have not yet begun to bear. The Hall has been the most fruitful variety of any I have tested. It begins to grow early in spring and my best tree is now about 20 feet tall.

Hicans (Natural crosses between pecans and other hickories)

Of hicans I have one tree of a variety which John W. Hershey says is

Burlington, although I bought it of Mr. Jones as Marquardt. Mr. Jones told me a few years later that he did not get the scion wood he expected, and that, while my tree was a typical hican, it was not Marquardt. I planted the tree in 1922, and the same year grafted a scion cut from it on a seedling pecan from Texas, obtained about five years before. The nursery tree has not yet borne, but the top-worked tree bore $3\frac{1}{2}$ pounds of nuts last fall (1932). These trees are vigorous, handsome, and produce valuable nuts. It seems safe to say, "Plant more of them."

Other Hybrid Hickories

I have two grafted trees of a natural hybrid supposed to have resulted from a chance cross between the shagbark and the bitternut. It is called Beaver, after Mr. G. E. Beaver of Millerstown, Butler County, this State, owner of the original tree. My two trees were planted in 1923 and have not yet fruited, although at the time of planting it was thought that they would come into bearing at an early age.

Black Walnut

Of black walnuts, I planted grafted trees in both 1922 and 1923. The varieties are Alley, Ohio, Stabler, Ten Eyck, and Thomas. They all came into bearing while quite young but the Thomas was first in this respect and has been the most prolific bearer up to this time. A few Thomas trees planted in 1928 had as many as a hundred nuts each last year, 1932.

What of the future of nut growing in Pennsylvania?

I don't know. Of the kinds which I have observed, I believe we should

plant only black walnuts, hickories, and hicans. Of the last I would like to know more of the McCallister. Mr. Hershey sold me a tree two or three years ago. It has made splendid growth and I am anxious to see it bear. Nuts of all kinds are very cheap this year. I am told that, in Reading, southern-grown pecans are selling at 28c a pound, and black walnut kernels at 29c. This does not look bright for nut growers. However, the picture is no darker for nut growers at the present time, than it is for growers of grain, cotton and apples. The depression has certainly hit apple growers. I know from experience as I depend upon apples for my chief source of income. But don't forget that just now we are in the depths of financial and economic doldrums, and when conditions improve there will likely be an increased demand for nuts at better prices than can be had now. In my opinion, now is the time to plant nut trees of the kinds adapted to our climate and soil.

Before closing I want to tell you that Berks County has what we believe to be the largest and oldest Persian walnut tree in all America. Mr. J. F. Jones was authority for that statement. In 1922 he asked me to go with him to hunt for this tree, of which he had heard. After several hours we found it about seven miles from my place. It was then 100 feet tall, and measured fifteen feet in circumference, three feet above ground. It had a branch spread of 92 feet. Mr. Jones, with his knowledge of tree growth and the data given him by the owner, estimated the age to be 210 years at that time.

Lorane, Berks County, Penna.

Species of Arbor-vitae

BY ARTHUR D. SLAVIN

Among the cone bearing plants used in ornamental work there is undoubtedly no conifer more commonly seen than the Arbor-vitae. Two factors are responsible for this condition; the first is the ease with which this type of conifer may be propagated thus making it possible for the nurseryman to offer it to the public, and the second, the wide variation which is to be found in several members of the genus thus making for many horticultural forms. It is because of this second reason that, today, we see and know more of the varieties than of the species.

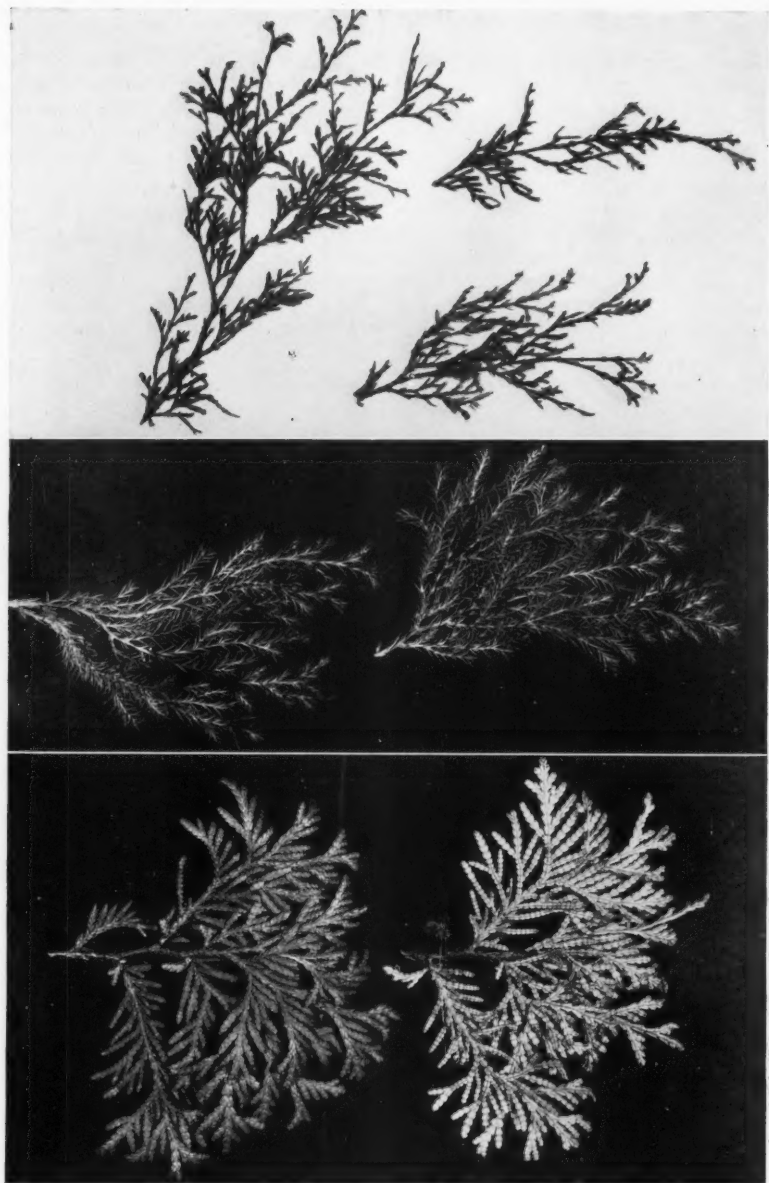
Most varieties of the Arbor-vitae represent forms of two species, namely, *Thuja occidentalis* and *Thuja orientalis*. The result is that far too often the species are forgotten and their use restricted to only the larger gardens and horticultural collections. This situation is unfortunate. Species as represented by wild types present forms of growth and habit fully as ornamental as varieties and, in most instances, preserve these characters for a longer time than do the forms. This later condition is often demonstrated in our older plantings where varieties, after two or three decades, become scraggy in appearance and halt in development whereas a specimen of the type becomes more dignified in appearance, maintains its habit and continues to make excellent growth. This is not to be taken as a condemnation of the varieties because they, too, have their characters of beauty and adaptability. It is not, however, compatible with good judgment to forget the species.

We are fortunate in America be-

cause, practically speaking, all of the known species of this genus may be grown. In some sections where one or more of the Arbor-vitae have been unsuccessful in the past, the work of selection and the discovery of new geographical forms is fast making it possible for all to enjoy the company of these denizens of the wild.

The cultural requirements of this group of plants, which in the species are most often represented by trees, are not difficult to meet. The one invariable condition is the need of well drained soil. This may appear an exaggerated statement to those who have seen many plants in the wild growing in boggy or wet land. Plants in cultivation have not the same reaction and it is best explained by saying that if native plants had a better place to grow they would do much better. Very often plants grow under adverse conditions despite themselves rather than because they can do the best where they are located. A fertile soil will benefit any plant and it is my opinion that most conifers prefer a soil tending towards an acid reaction. There is no doubt that cultivated evergreens in the Northern States prefer a humid atmosphere. Orientation or the proper placement of plants is fully as important as the soil in which they are to grow. Success in planting is only too often lost by ignorance and poor judgment in placing materials. The *Thuja* will not make good growth in dense shade and with the more tender kinds an open southern exposure will cause the foliage to color brown in winter.

An interesting morphological character which forms the basis of several



Arthur D. Slavin

Thuja occidentalis var. *Ellwangeriana* showing both juvenile and adult foliage from same plant; center, *Thuja orientalis* "Rosedale," showing juvenile type foliage; *Thuja koraiensis*, lower, showing upper and lower surfaces of foliage.

beautiful varieties is the two types of leaves found at one time or another on all Arbor-vitae. When raised from seed the first leaves to make their appearance are needle-like and arranged in spiral formation along the stem. Normally, after the first season's growth, these leaves are superseded by the typical foliage ordinarily seen on mature specimens. In some instances, however, this needle-like or juvenile foliage persists either completely or in part and forms the basis of varieties which are grown especially for their foliage. Among these may be mentioned *Thuja occidentalis Ellwangeriana* and *Thuja orientalis* "Rosedale." The former has foliage of both kinds while the latter is entirely without adult or typical leaves.

Thuja occidentalis, the American Arbor-vitae, native in most of the Eastern States and Canada, is so commonly known that little comment appears necessary. It is represented in our gardens by perhaps more forms than any other conifer. Pyramidal in habit with a straight trunk covered with reddish-brown bark and with dark green foliage it makes an excellent tree often more than fifty feet high. Determining features are found in the leaves which are conspicuously glandular and often yellowish-green on the under-side. The cones of this as well as the other species differ in appearance from the evergreen cone as it is generally known. They are oblong or oval in shape (oblong in this species) and are made up of not more than a dozen scales each of which has a thickened process, known as a boss, at the apex. On the inner surface of each scale are two to three seeds. The scales are seldom alike in size and generally only those seeds inside the larger scales are fertile.

Where permanency is desired there is no better representative of the

American Arbor-vitae to plant than the species. Its use is not restricted to specimen planting and there is no better conifer to establish as a low wind-break or hedge. For the latter purpose it adapts itself excellently to clipping and in a comparatively few years will provide a dense wall at least fifteen feet high. Ignoring the many garden forms which seldom attain great height, I prefer, whenever possible, to use one or another of the other species. This desire is not based on any fault I can find with this conifer but because I would like to have something which my next door neighbor does not possess.

There is something to be said about the selection of geographical forms of this species suitable for ornamental work. It is quite possible that much of the material growing in our fields and on waste lands is not the most suitable for ornamental purposes. In Durand Eastman Park at Rochester, New York, are several specimens picked up as seedlings some years ago in Canada. They appear to be more vigorous growers and have better shape and color. Arbor-vitae forests were not uncommon in the province of Ontario years ago and it is not beyond possibility that material grown from sources such as this would produce better tree forms.

Thuja plicata, the Giant Arbor-vitae, is the largest tree form of the genus. Its range extends from British Columbia to Northern California and from the Pacific Coast inland as far east as Montana. In the wild it attains a height of well over two hundred feet. What proportions it will reach in cultivation is probably not known as few trees have been grown a sufficiently long time in parks or gardens. Specimens in the Rochester Parks are about thirty-five years old. As stated by Sargent and others, ma-



Arthur D. Slavin

Thuja occidentalis
27 years old, 22 feet tall

terial from the Pacific Coast does not appear to be hardy within the eastern confines of this country. The specimens growing at Rochester were obtained from the Arnold Arboretum in 1896 and it is believed that either they or the plants from which they were propagated were brought from Idaho by Dr. Sargent. Coming from a drier climate than the Pacific Coast they have thrived well and several, grown from cuttings taken from the original plants, have attained a height of thirty-four feet in twenty-two years.

Much comment is offered regarding the requirements for propagating this species, some claiming that plants grown from cuttings do not attain tree size. At Rochester both grafts and cuttings have been made with identical results. The vigorous growth and size of this species renders it most adaptable for both specimen planting and windbreaks. As a specimen tree it is unusually beautiful with graceful horizontal or slightly drooping branches which completely cover the trunk from base to apex. The foliage is shining green with a slight tinge of yellow while the new growth is being made. That it will replace the American *Arbor-vitae* where a large tree is desired appears inevitable. Also its use as a reforesting material appears quite promising due to its excellent growth and the durability of its wood.

It is distinguished botanically by several distinct characteristics. The trunk is somewhat buttressed towards the base on older trees and is covered with reddish-brown bark which peels off in narrow longitudinal plates. The branches are pendulous towards the ends except at the top of the tree where they have a tendency to ascend. Unlike the species *occidentalis* the leaves have very inconspicuous glands or none at all. On the under-

side they are streaked with white. Unlike the American and Oriental *Arbor-vitae* it is represented by only a few varieties, eight in number, and of these only two or three are dwarf forms.

Thuja Standishii, the Japanese *Arbor-vitae*, appears to have a small area of distribution in the wild, published accounts giving Central Japan and Northern Korea as its habitat. Most authorities describe it as a small tree seldom more than twenty-five to forty-five feet tall. I am able, however, to find one report where trees ninety feet in height have been observed. The latter comment is hardly important for our purpose as it is quite safe to say that there are no trees in the United States more than forty-five feet tall and only a very few of these. A specimen even twenty feet tall would be an excellent plant. It is a tree of comparatively recent introduction to the Western World and was first grown in England about 1860. The oldest specimen which I know in this country is at the Hunnewell Pinetum. It is reported to have been planted there in 1874. The oldest plant in the Pinetum of the Rochester Parks is now thirty-one years old and measures about eighteen feet. It is a beautiful specimen but, unfortunately, is so located that it is inaccessible to the photographer. The accompanying photograph shows a smaller tree about thirteen years old and seven feet in height. As it becomes older it broadens out considerably and measures about the same in both horizontal and vertical planes.

Its erect trunk and horizontal, wide spreading branches which are thickly disposed make it an excellent specimen tree. It should be given average protection from the elements and not crowded, but afforded ample space to develop and display itself. A lawn



Arthur D. Slavin

Thuja plicata
19 years old, 34 feet tall

protected from too open an exposure to the south as well as from open blasts and slightly shaded by large trees whose branches are well above ground provides an excellent setting for this tree.

Like the other species, it is not difficult to determine. The reddish-brown, thin bark and broad habit of older specimens immediately identify it. The branchlets are flattened in cross-section and the leaves are pale green and without glands. The foliage is whitened on the under-side although not as distinctly so as in *Thuja plicata*.

This species and the Oriental Arbor-vitae are the most difficult to propagate from cuttings although it can be readily accomplished by proper care. There appear to be no horticultural forms of this tree, a feature often to be observed in plant materials grown by vegetative means such as cuttings, grafts, etc., or from seed which is obtained from material in the wild.

Thuja koraiensis, the Korean Arbor-vitae, is the most recently introduced species. It is a native of Korea where it was found by Dr. E. H. Wilson in 1918. Whether it is cultivated in Japan I do not know, but the probability is that it is not as it is rarely mentioned in print and little data concerning it is available. It is described as a low, trailing shrub or occasionally a slender, pyramidal tree to twenty-five feet in height. It is unlikely that it will develop into a tree in the eastern and northern sections of this country as Wilson states that in the wild it is found as a tree only in sheltered ravines. In Ireland at County Down, the Marquis of Headfort has a specimen more than six feet tall. The only plants which I have seen are at Rochester and the largest measures about one foot high

and only a little more in cross section.

It appears shrubby in habit with irregular, decumbent, spreading branches terminating in foliage which lies in many planes. The branches are much flattened in cross-section with thin, dark brown bark. The foliage is bluish-green above and glaucous on the under-side. It is also glandular. The particularly distinct grayish cast on the under-side of the foliage offers a most distinct character in its determination. It is doubtful whether this species has ever produced cones in cultivation. The cone is said to be light brown and elliptic-ovoid in shape with eight scales. Dallimore and Jackson consider it to be allied to *Thuja Standishii* but having coarser foliage and with broader cones and cone scales thicker than in that species.

At Rochester, N. Y., it appears moderately hardy and may be considered as a successful plant as far north as Massachusetts provided it can be given some protection. It propagates readily from cuttings. Present developments indicate its future use for low plantings and rock garden work. Growing in partial shade its bluish green leaves are so arranged that much of the gray under-side is visible making for a soft, pleasing color contrast. I can see no reason why this little fellow should not become an established garden plant within a short time.

Mention may be made at this time of another species, *Thuja sutchuenensis*, an Arbor-vitae from Central China which as yet has not been introduced into cultivation. It is supposed to be closely related to some of our known species and is said to be a tree, more graceful than *Thuja plicata* but resembling it in some ways. The leaves are without glands. That we will sometime have this tree in our gardens would seem doubtful. Its small



Arthur D. Slavin

Thuja Standishii

A specimen thirteen years old, seven feet high

distribution in the wild and its range in Central China would indicate too great a tenderness for our climate.

Thuja orientalis, the Oriental Arbor-vitae, is a native of Central and Western China, Korea and other near sections of the Asiatic region. It has long been cultivated in Japan and it is my belief, although I have no positive data, that it is naturalized in some parts of that country. It has been in cultivation in Europe since the eighteenth century and while authorities vary as to the date of its introduction, the earliest given is before 1737. It has been in this country probably since colonial aristocrats first brought garden materials from Europe.

At one time this species was given separate generic rank and was called *Biota orientalis* which name is still used by some authorities. Its chief difference lies in the fact that the seeds are wingless whereas in the other species they are winged. A second characteristic and one more easy to observe is the erect placement of the branchlets. The foliage is bright green and glandular. The fruit or cones are definitely marked by a fleshy hook-like boss at the apex of the cone scales.

In its native habitat it is said to attain a height of forty feet with broad, dense, columnar habit. The latter characteristics I can well vouch for but the largest specimen I have ever seen in this country measures nineteen feet in height. This tree as shown in the illustration is now grown in Durand Eastman Park at Rochester and is twenty-four years old. It is quite well known and several stories have sprung up about it. The following is a complete outline of its history in so far as available data permits an account. The Oriental Arbor-vitae has been considered for many years as generally unfit for planting in our Northern States.

Attempts to grow it have, in many cases, proven unsuccessful due to the severe browning of the foliage during the winter months. The late Dr. E. H. Wilson of the Arnold Arboretum collected considerable seed of this tree on his expeditions to Japan, Korea and China with the prospect of finding a hardy form which might prove successful in the colder sections of this country. In 1918, while in Korea, he collected seed which later was sown at the Arnold Arboretum. The resulting plants proved quite hardy in comparison with material previously available. However, latest reports are that this strain is none too hardy in the vicinity of Boston.

Some years previous, Dr. Sargent sent to the Rochester Park Bureau seed of the Oriental Arbor-vitae. This was planted and made vigorous growth. When announcement was made that Dr. Wilson had found a new hardy race of this species, it was believed that the plants at Rochester were a part of that batch of seed. Investigation later showed that the Rochester plants were received in 1909 while the Korean seed were not collected until 1918. Unfortunately, there are no records to show from whence the earlier collection was made. All that is known is that it was collected by Dr. Wilson and by comparison of the dates of his expeditions, it appears most likely that the material was collected in China, perhaps from some temple grounds. It is perfectly hardy at Rochester and shows no tendency to brown during the winter months. Seedlings have been grown in large quantity from the seed of the original plants which are now bearing cones. It is necessary to note here that young plants will color purplish-brown for the first few seasons although remaining perfectly hardy and making excellent growth. After attaining a height



Arthur D. Slavin

Thuja orientalis

Raised in 1909 from seed collected by E. H. Wilson "somewhere" in China

of about two feet this condition of winter coloring disappears and the plants remain green throughout the entire year. Unlike the American Arbor-vitae this species appears to have no forms which attain the height of the type and, hence, where an arborescent form or small tree is desired there is no other choice than the type. Its use for specimen planting will undoubtedly become popular as this hardy form becomes better distributed. Its huge columnar habit with branches extending from the base reminds one of the fine old specimens of Irish Yew seen in gardens of the British Isles and it may be said without fear of contradiction that it has no substitute amongst the cultivated conifers of America. The forms of the Oriental Arbor-vitae rank next in number to those of the American species and their beauty is difficult to surpass. They are, however, comparatively short lived and should be planted for immediate effects rather than posterity. Propagation of the forms also differs from the type. The former generally being easily rooted from cuttings while the latter is more difficult and requires more perfect conditions. Often it will be found that cuttings of the species will quickly form a callous of large size but the development of roots will not begin.

The last species is an Arbor-vitae in name only. It belongs to another genus which is monotypic, its single representative being *Thujopsis dolabrata*, the Hiba Arbor-vitae. It is a native of Central China and was introduced to America in 1861. An important geographical form found in Northern Japan is known under the varietal name *Hondai*. It has been in this country about fifteen years.

The Hiba Arbor-vitae is generally

found as a shrub in American gardens although specimens more than twenty-five feet in height have been reported. In England it grows into a tree as high as fifty feet. Its growth is slow but if arranged in a sheltered location it will retain its broad pyramidal habit of growth and make a pretty plant. Practically all accounts mention it as a tree growing in the wild where it has the shade of other forest trees and for success, it should have a rich, well drained soil and, if possible, a humid atmosphere.

It is quite easily determined from the *Thuja*, which it resembles, by its much larger leaves, the surface of which is dark, lustrous green and with large, clearly defined white markings on the under-side. The branches are whorled and generally horizontally spreading. The branchlets are noticeably flat and appear as if plaited in whip-cord fashion. The cones are subglobose with six to eight scales. On the inner surface of the lower scales are three to five scales.

The form *Hondai* promises to be the better plant for American gardens. Its habitat is more in keeping with our climate and it appears to be a more vigorous grower. Wilson, in "Conifers and Taxads of Japan," records trees more than one hundred feet tall and mentions sixty feet as the average size. It differs from the type in its smaller leaves and larger, globose cones.

Besides the geographical form *Hondai*, there are several horticultural forms. All are propagated from cuttings. In Japan where the form *Hondai* is employed as a reforestation material, better results are obtained from rooted cuttings than from seed. This may prove a hint to our reforestation agencies.

The Idealist in the Garden

One of the pleasures of the past summer was to watch *Ruellia ciliosa* continue to flower from about mid-July until the end of September. This plant is rather new to me, being only its second summer in the rock garden. I shall never regret that I allowed Mr. van Melle to persuade me into taking a plant of it when I first saw it in his rock garden several years ago, even though I did have to squeeze it in between stones to plant it in my over-crowded space. It has more than repaid me for the planting; and has had to contend with *Dianthus deltoides* "Brilliant" and struggle through the twigs of *Cotoneaster microphylla*. It suffered bravely throughout the summer because of neglect in watering and because of its densely populated neighborhood; yet it was continually in flower when the rest of the rock garden was sadly barren save for *Nierembergia rivularis*, which isn't a great glory with me being cruelly planted where it gets much too much sun and far too little moisture. All through the late summer these two plants together with *Rosa Rouletti* and *Talinum calycinum* furnished all the color my rock garden had to offer until *Iris dichotoma* began to open. Last season this iris did not begin to flower until almost the end of August.

Now that I have given these four plants this special honor I remember what delighted me most; the fact that for the first time in the four years that I have had it, *Viola gracilis* proved itself to be everblooming. I have, until this past year, always caviled over its short blooming season; but no longer—provided it has not flowered itself to death. Years ago when several seedling plants were put in there was plenty of space for them

but their neighbors grew far more than I had expected them to grow so that now a Kurume azalea "Christmas Cheer" has spread into the ever-extending branches of a cotoneaster and the soil in which the viola grows no longer gets sunshine. Perhaps this shade was what the plants wanted for now they grow up through the twigs of both shrubs as though they were vines and the butterfly-like purple bowers danced merrily over and through each of the bushes all through the summer.

Although the ruellia is a native to southern New Jersey, according to Hortus, none of us who live in that locality had ever seen the plant before. With me it makes a rather open little clump of foliage some nine or so inches high and bears a succession of long-tubed, trumpet-shaped bowers of soft lavender much more toward the blue side of that color than the pink. The poor things are weak at their attachment to the calyx and soon slide off along the pistil and there hang like fairy trumpets which some elfin children, tiring of their play, have flung aside. The surprising thing about these cast off blossoms is that they stay fresh as long as they do. I gathered some one morning and brought them into the house; here, lying on a table and without water, the corollas did not fade until late in the evening. Were I able to make another planting in a new rock garden I should use this ruellia on some first ledge which would be just behind a sod of *Nierembergia rivularis* where the two could form my August picture and then feel that one need never complain about lack of flowers for that month.

I have always raved about the peo-

ple who get a lot of stones together, plant a few near-dwarf evergreens and some common "rock" plants and then sow portulaca seed and call the thing a "Rock Garden." The family has patiently listened to me and shaken wise heads in sad agreement. So when I brought home a small plant of *Talinum calycinum* and they had gathered around to observe the little stranger, one observing member remarked that it looked like a "portulaca;" I innocently replied that it was and for several moments could not understand the gale of laughter which followed. Sad it is for me to acknowledge that this charming little thing which botanists call talinum is a member of that ill-used clan. Being a second cousin to the annual it inherits the family trait of self-seeding which is to me its only bad quality; but so far it has not become a nuisance and the seedlings are easily removed when they have been so thoughtless as to have germinated where they are not wanted. Blooming as it does in a season when there are so few other flowers in the rock garden this plant is indeed a God-send. Its blossoms are like small flowers of the common portulaca in shape, about an inch in diameter, and of a cherry-red in color not unlike the tone of the old climbing rose Reine Marie Henriette. They are very short lived, lasting only until just after mid-day; or does my memory play me false and do they only open after noon and last through the rest of the day? I am sorry to have to leave this point in question but I find that I have no notes on this point and can not find any reference in any book or catalog; I would have sworn that it was the former until I had written it and then doubts crept in. At any rate they do not last throughout the day but are borne so plentifully that

there is always a fresh supply for the morrow. The plant forms a low bush some eight inches high and the fleshy needle-like foliage has a slightly glaucous tinge which looks well even when there are no flowers. It is one of the most interesting plants that I have acquired in the last few years.

Coming from our southwest, Arkansas to Mexico, I had not expected it to be hardy. But it has lived through the last two winters in southern New Jersey and without any protection, although it grows on the highest and driest part of the garden. There are others of this genus that would probably prove as desirable for the rock garden but I have not even seen them listed.

Rosa Rouletti I have mentioned in these pages before and should not do so again were it not that I have not been able to recover from my amazement that so small a shrub can manage to so continuously send out its blossoms. My two year old plant is not six inches high and could easily be covered by an old fashioned soup plate, yet it persists in giving its little roses throughout the whole summer. In a better soil and location, where mine is the soil is both dryish and rather poor and the site is fully exposed to a grilling sun, I am sure that it would form a larger bush and give even more bloom for I have seen it in such a state in other gardens.

Many would not like the above mentioned plants as well as I do because none of them produce a mass of bloom, rather giving a scattering of blossoms which is far more pleasing to me than sheets of color. But then I hope that there are others like myself who prefer individual stems of bloom to wide clumps of color. To me a good healthy iris plant or a small group of daffodils where each flower is able to show its form and

individuality is far more exquisite than a mass of them where nothing is detailed and only a sweep of color is presented to the eye. Nor can I become excited over a mass of any other flower for I feel that very much the same effect could be had by a silk display in a department store window. shape, and almost all flowers have, I feel that it is worth seeing as well as the color. Because of this—affliction, I am sure many would term it—I view with alarm the increasing hordes of landscape and garden designers who are descending like locusts upon our renaissance in gardening. True gardening comes from within, outward expression of an inner urge, and an inherent love of the plants themselves; and can never be laid on as a color-vener. So whenever I am visiting and my host suggests taking me to see gardens of his friends I always try to avoid the landscaped, the “well designed” garden, choosing rather to visit the “home-made” garden, done by its owner without a color chart. I am almost sure to learn something in such a garden and to see something new; and am always sure that I shall meet a vital personality in the garden’s owner.

But there is one class of plants which one can not avoid massing, for by their nature they are mass plants. Very few of the Natural Order Compositae flower singly, and most of this group bloom in or toward the autumn; and very properly so, for it has always seemed to me that one of the prerogatives of autumn was to lay color on with a lavish hand. We see it first in the fields of goldenrod, then in sweeps of wild aster; in the long sunsets and the changing foliage of the trees. It is as though nature wanted the gardening year to end in a blaze of glory.

Here nature clearly stamps her approval of mass planting in her arrangement of the blossoms of the Composite family for each individual flower is a small, rather insignificant unit, and all more or less alike, so that a large cluster is necessary to make an impression. And what an impression they make! Even then I am perverse enough to prefer a stem of thinly scattered flowers in the Michaelmas daisies and chrysanthemums to heavy clusters of them.

There is little else in bloom at this season of the year to combine with either the aster or the chrysanthemum except Japanese anemones so one is compelled to use grey foliated plants like lavender and rosemary and especially *Artemisia lactiflora* or the deep rich greens of evergreens. My garden is sadly lacking in Michaelmas daisies although they are dear to my heart; for with the small space at my disposal they would shortly crowd everything else out. But it is one of the dreams I intend to realize whenever that proverbial ship arrives to have them by the score. There shall be a long, wide path, five hundred feet of it or more if I can have it; and without a sundial, pool, gazing globe or jar in it to break its length so that all the garden designers shall throw up their hands in horror at the awfulness of it; it shall not be a level path but shall follow the natural contour of the land so as to get level beds on either side; stone walls of varying heights, from four to eighteen inches high, shall have to be built to edge the path. At the top of this rock edging dwarf irises shall find a happy home and species of tulips and crocuses a snug comfort which shall make them forget their native dwelling places. There will be spaces for summer blooming plants and then will come the autumnal dis-

play. But not in a regular line, rather in waves and billows with some of the plants quite close to the path; and the vast majority of these plants will be Michaelmas daisies with only a few clumps of Helianthus, Helenium and Rudbeckia. Perhaps no one but myself will like that path; but that will not bother me in the least for what is one's garden for except to please its owner.

If I cannot show the aster family in my present garden I can display the chrysanthemum. They and the iris and the narcissus occupy far more space in my domain than they should according to the strict rules of design; but it is my garden. So from the time when "Glory of Seven Oaks" begins to show color until after hard frost has spoilt the last flowers there is a continuous blaze of color.

For the last two years Thompson and Morgan have advertised a new strain of chrysanthemums which were said to bloom the first year from spring sown seed. This past spring seed of this strain was tried and the germination must have been a hundred per cent; there were so many plants that I could give them to several friends and can therefore report on them from several gardens beside my own. This strain, "Japanese Mountain," grows to a height of a foot to a foot and a half, the main stems arching over so that all the lateral growth forms a plume of color down to the base. The individual flowers are from a scant inch in diameter to over two and are in clusters at the end of every branch and in smaller sprays from each leaf axil all along the stem. But the best part of the plant is that all the flowers do not open at once but gradually over a period of more than a month which makes for a much longer blooming period. The flowers are single and in

various colors from white through all shades of yellow and bronze and through all the pinks and reds to deepest crimson. A few had very narrow petals which gave them a spidery appearance that I, personally, do not like so they were immediately destroyed; but the large majority bore wide petals. They looked to me like the same chrysanthemum which has made such a furor at the fall shows these past two years and is called "Cascade Chrysanthemum" and sells at quite high prices. I am reporting upon these plants before I have tested their hardiness because they are far too charming to remain hidden; even though they should prove to be tender, which I do not think will be the case, they can always be treated as annuals. It should be added that mine were planted out quite late in the season and were given no special treatment save that they were pinched back several times during the summer. One or two were not pinched back and they flowered quite as well as the others but were not as compact in growth; so it is not even necessary to take that trouble.

Planted at the top of a low wall where they could spray their flowers in a cascade of color over the stones or used in a large rock garden to cover barren places where spring blooming bulbs are resting would be ideal places for them. Mine were all used in the foreground of borders and in some narrow beds. In all these places they made and would make ideal plants for autumnal bloom.

From this type of singles to the larger flowered named varieties is not only an increase in size of flower but also in manner of growth. For when these larger flowering chrysanthemums lie over there is no grace about the arch but only gawkyness so, much as one hates to stake plants, it is really

a necessity in this case. Of the large flowering singles which I know "Caroline Robbins" comes first in my esteem; it is a good sized flower of a deep mallow pink, a color which I usually dislike, but here it is gradually softened into a soft and lovely rose-color, the yellow center is just yellow enough and large enough to be a perfect foil to the ray flowers both in color and in size. After this, "Old Gold" satisfies me most with its large yellow flowers of two tones of gold; then comes "Alice Howell" of a rich orange yellow with a paler center. "Mrs. Edward Harding" is a large flat blossom of bright rich claret with a deep golden yellow center and adds to its charm by having a delightful fragrance which is both sweet and spicy. "H. Marie Totty" is rather spoilt for me because it is entirely too large a flower but the coloring is delightful being a brilliant crimson which shades into scarlet as the broad rays approach the full rich yellow center.

Among the doubles another pink will have to head the list. I am always loath to be compelled to place a pink flower at the head of a list for I dislike that color so intensely. Only when it has yellow in it to make it a salmon or an apricot or is a silvery pink like the "La France" rose am I able to really like the color. Far more pleasing to me is the ill-reputed magenta, except when weak and washed-out, but then it is becoming a pink. But I shall have to give first place to the chrysanthemum "Acto" on account of its lovely form even though its color is rose, and quite a pleasing rose I must acknowledge. The flowers are of quite a good size and the petals are incurving, quite distinct from other hardy chrysanthemums; it is the only hardy of this type that I have ever seen and I wish others of this type would be developed.

"Glory of Seven Oaks" which I have mentioned before and which is supposed to be also known as "Carry" is the earliest to bloom and is rather a low growing plant with blossoms of bright clear yellow. "Cameleta" with quite large flowers of a deep glowing yellow and "Cranfordia" another large flowering yellow but with a bronzy tinge to the color will always be grown in any garden I may ever have. "Mrs. Henry F. Vincent" is another one I shall never be able to do without unless one of the same coloring comes along that does not get messy about showing its center towards the end of its blooming. In color it is one of those queer blends which no two people can ever see alike, fawn and bronzy yellow with so strong a flush of salmon-pink that in some lights it looks quite pink and in others a topaz-yellow. "Zelia," which I do not seem to be able to keep over winter no matter where I plant it and so must yearly renew it, is a glorious orange-bronze, quite the most brilliant of any of the yellows I know.

It is harder to play favorites among the reds for as fast as I decide to give any one of them first place I find I am liking one of the losers better; so these which I have to name come with the recommendation that each has been placed first in my regard many times and will be so placed many times again. "Lucifer" is a good-sized flower of a rich ox-blood red and grows into a sturdy bush of stiff stems which never need staking; it, like "Cameleta" and "Zelia" belongs to the class called, in some catalogs, Old Fashioned Chrysanthemums meaning that they are robust and hardy and bear flowers larger than the pompons and of slightly looser petalage. "Red Doty" is of the same shape as the rest of the "Doty" fam-

ily and in color is a rich wine-red with a silvery reverse on the underside of the petals but that does not mean there is a two-color effect for the "silver" only shows enough to brighten the red without being noticeable in the open flower. "Firelight" is a pompon of quite large size for this type and in color is a bright carmine shaded with scarlet; it is a flowing flower which combines beautifully with bronze and yellow. "Ade-laide" is a smaller flowered pompon of deep rich mahogany red and if it did not bunch its blossoms so tightly together I think that I should always give it first place among the reds.

Of whites I shall say nothing, being the one white flower which I do not like, for the shaggy blossoms get dirty so quickly that they lose all charm for me and anyway I hide behind the contention that white is not an autumnal color. Perhaps this is a poor excuse but one has a perfect right to be whimsical in gardening.

This year, quite by chance, "Lucifer" was planted near a clump of *Sternbergia lutea* which was still in good form as the chrysanthemum began to flower and the two proved to be quite a stunning combination. It suggested the combination of chrysanthemums with autumn crocuses. *C. speciosus* would make a lovely foil to any of the yellows and many of the reds and *C. zonatus* would combine well with the pale yellows and the deeper pinks. Such combinations would be especially pleasing if the chrysanthemums used were the singles of the "Japanese Mountain" strain. These combinations could be made permanent by always replanting the chrysanthemums each spring when the clump is divided by re-enriching the soil and replanting in the same spot.

Speaking of autumn crocuses I

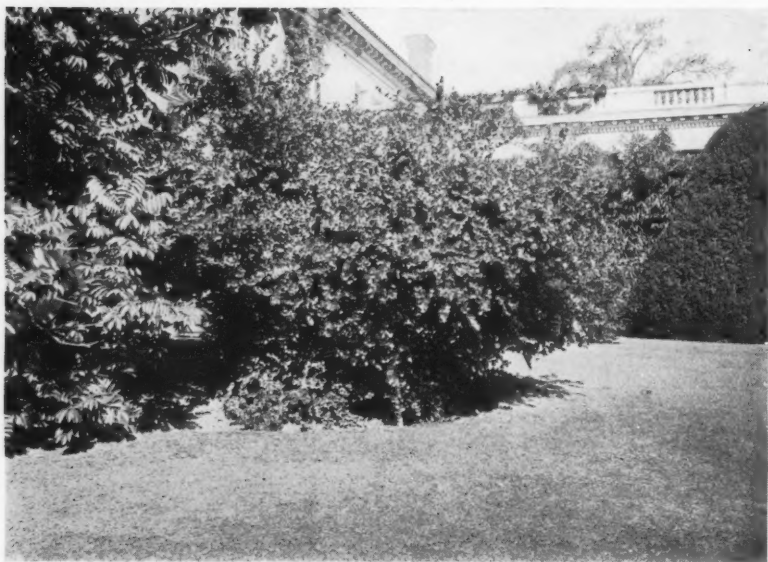
wonder why it is that both the species mentioned above always bloom with us here in America fully a month later than they do in England. Every English writer clearly states that they flower in mid-September, "after the early September rains," yet here it is always mid-October before they appear. Yet the blooming period of the *sternbergia* is the same here as over there. I wish we could obtain more species of this bulb in this country. Foreign catalogs list several beside *S. lutea*; there seems to be beside this species its varieties *major* and *angustifolia*, another species *S. macrantha* and also several spring blooming species. *S. macrantha* is said to bloom after *lutea* and to have large canary-yellow flowers, a shorter stem and greyish-green foliage. Surely this would be a valuable addition to our all too short list of autumn blooming plants. How much difference there is between the species and its varieties *major* and *angustifolia* I have not been able to discover. If there is very little then I am sure that I have one or the other of them beside the type for I have two lots gotten from different sources; one seems to bloom just a bit before the other and, unless I am imagining things, is slightly smaller in size of flower. It has always been a wonder to me that coming from so southern a climate as Palestine the foliage of these bulbs should be hardy enough to stand our winters and yet without the slightest protection it seems to be absolutely indifferent to frost and sleet.

For the past three winters I have been carefully protecting with evergreen boughs two plants of *Poncirus trifoliata* or *Citrus trifoliata* or *Aegle sepiaria*, to give a few of this plant's botanical aliases; fortunately it has but one common name—Trifoliate Orange—under the impression that it

was just about hardy in my locality. It, or rather my two plants, were given to me by an old lady who assured me it would be quite hardy; but I hesitated to believe her and have been taking extra precaution against loss. Last spring while visiting a garden among the hills in northern New Jersey, which means that the winters are much colder than in the neighborhood of New York City, I was astonished to see several of these trees about fifteen feet high and many more of lower growth. Upon inquiry, my host informed me that the first of his specimens had been planted, and with much misgiving and fear, over ten years ago. It proved absolutely hardy and others were added to his garden, this time in more exposed situations where they too have stood the winters uninjured, although the Standard Cyclopedia of Horticulture gives its most northern limit as Philadelphia. One never knows how hardy a plant will be until one tries it out.

As this little tree is so valuable an ornament to the autumnal garden I shall go into detail in its description. *Poncirus trifoliata*, this is the name Bailey prefers, is a small tree which may grow as tall as twenty feet although I have never seen one taller than fifteen. It comes from "Northern China," from just which district I do not know. The leaves are thick

and glossy like those of the real orange tree but are smaller and arranged in groups of threes and the foliage is not as dense as in the ordinary orange. Before the leaves fall in the autumn they turn to a rich yellow while the numerous stout spines and the stems of the plant remain a deep bright green at all times which makes it a conspicuous bit of color in the winter garden. The flowers are quite like those of the orange save that they have no fragrance. Beautiful as it is at blossom time it is in the autumn that its full glory is most evident; for then the fruits which are about as large as golf balls turn to a rich, deep orange-yellow. At first against the deep green of the leaves and stems they stand out in delightful contrast, especially when the fruits are in all shades of ripeness from green balls to the fully matured orange, and later when the foliage has turned yellow and the fruits are rich glowing orange this little tree is ever a picture of great beauty. The fruit cannot be eaten even by squirrels who sometimes bury the oranges and the next spring one finds seedlings springing up to mark the squirrels' mistakes. There have been several hybrids raised between this plant and the ordinary orange in the hope that a more hardy eatable fruit might be obtained but so far nothing satisfactory has resulted.



U. S. D. A.

Specimen Carissa, Huntington Botanic Garden, San Marino, Calif.

The Carissa or Natal Plum

BY KNOWLES A. RYERSON

South Africa has contributed many striking plants that have already found their way into the gardens of the warmer parts of the United States. They include a wide range of types—from the tiniest succulents the size of small pebbles up to large trees. Among the shrubs from this region that have become fairly well established, especially in Florida and southern California, is the Carissa or Natal plum, botanically known as *Carissa grandiflora*. It is not a recent introduction, having been brought into Florida by Theodore L. Mead in the eighties, while some time later it was brought into California but the circumstances are less certain. It has

also been grown to a limited extent in Lower Texas.

The Carissa is a fine shrub, with deep green foliage, fragrant blossoms and showy red fruits which are edible. It makes a satisfactory solitary plant, and, also, because of its much branched habit and its bifurcated spines, it makes splendid hedges, both sheared and unsheared. This is a common use for it around Durban in Natal, and the bright red fruits are found in quantity on its markets at the ripening season.

The Carissa belongs to the Apocynaceae, hence is related to the oleander and the vincas, and not distant from the Asclepiads or milkweed family.



U. S. D. A.

Carissa grandiflora
Two-thirds natural size

The genus has some 39 members, of which several have been introduced into this country. It enjoys tropical and subtropical climates, both humid and semi-arid, and is found in most tropical countries; it is injured by temperatures below 26° or 27° F., so that its adaptation to American gardens is accordingly limited. In habitat it is a thickly branched shrub, and retains its shrubby habit even though it attains a height of 15 to 18 feet. Its foliage is dark, glossy green in color, the leaves being generally elliptical or elliptical-oblong to rounded or obtuse in form, one to two inches long. It is armed by stout, forked thorns which, combined with its profuse branching, make it an impenetrable barrier for hedge purposes.

The white flowers are star shaped, almost waxy in texture, and are about two inches in diameter. Their fragrance is rich and sweet, and resembling the jasmine. While it flowers profusely during the spring, blooms appear sparingly throughout the year. The bright red fruit is ovoid or elliptical in form and varies from an inch to two inches in length; its skin is thin and the enclosed red, rather granular pulp contains a milky juice; there are several thin, circular seeds in the center. As a fresh fruit, to be eaten out of hand, it is rather tart and not destined to arouse undue enthusiasm, though as a component of fruit salads it adds a rather sprightly flavor and a dash of color. Cooked as a sauce, its flavor resembles that of cranberries quite closely; jelly made from it is excellent. It is not to be expected that the Carissa will ever become an important market fruit; its place is primarily in the home garden.

Carissa plants show much variation as to fruit itself, bearing habit, and length and arrangement of thorns.

One of the most prolific bearers in Florida has been named the "Gifford" for Dr. John C. Gifford of Coconut Grove, who selected it from a collection of seedlings from different sources. In southern California Miss Kate Sessions propagated an excellent variety for many years. More recently, Dr. J. Eliot Coit has been making selections both for heavy fruiting, high quality and also for ease in picking, the fruit on some plants being borne out beyond the thorns, while on others the hand of the picker must run the gauntlet of a formidable spiny defense before the fruit can be reached.

It is as a hedge that the Carissa has found especially satisfactory utilization. Its spiny, closely packed foliage makes an impenetrable green wall. It stands shearing well, although, of course, the number of flowers and the amount of fruit are accordingly reduced. White flowers and bright red fruit against the dark green of the foliage make an attractive picture practically all year round. As a foundation shrub, the Carissa has also proved very useful, giving, in addition to its own attractiveness, a rich, dark background for other plants.

It is propagated readily by seed, which are planted in flats or pots in well-drained sandy loam, barely covered, and are transplanted to pots as the seedlings develop. Where cuttings are used, bottom heat is required for rooting, and even this method is not always satisfactory. Excellent results have been obtained by a method developed by the late Edward Simmonds at the former Plant Introduction Garden at Miami. Young branchlets are notched, cutting half way through the stem at a point three to four inches from the tip; they are then bent downward at this point and left hanging until a callous forms, usually in about



U. S. D. A.

Hedge of Natal plum, Carissa grandiflora, in Miami, Fla.

two months. The branchlets are then severed at this point and the calloused cuttings placed in sand under shade where they readily root. The *Carissa* layers easily and this also offers a simple method of propagation. While ordinary shield budding in the spring is not difficult, this method of propagation has not been used very extensively.

The plant isn't at all particular as to the type of soil in which it is planted; it thrives well on light, sandy soils as well as on heavy clay, and can stand considerable drouth.

A number of other species have been introduced at different times but have not proved so useful as *Carissa grandiflora*. *Carissa bispinosa* (*C. Arduina*) closely resembles *C. grandiflora* and is sometimes mistaken for it; however, its flowers are much smaller, be-

ing only half an inch in diameter; its fruit is also smaller, being about a half inch in length with but 3 or 4 seeds instead of up to 20, and are borne in clusters. This species is reported as being very drouth resistant in South Africa. *Carissa carandas* has simple instead of forked spines; its fruits, which are less than an inch long, are black when ripe, smaller than *C. grandiflora*, and are used green in India for pickles, and for tarts and puddings when ripe. *Carissa edulis*, a tall, straggling shrub native to tropical Africa and Arabia, which produces a small purple fruit, and *C. ovata*, an open shrub from Australia, producing small fruits, have not been of sufficient merit to warrant much attention, except for the amateur who wishes to get together related forms or species collections.

A Book or Two

The Natural Gardens of North Carolina. By B. W. Wells. The University of North Carolina Press, Chapel Hill, N. C. 485 pages. Illustrated. \$3.50.

Strictly speaking this is not a garden book, but it is the sort of book that gardeners will read with the keenest interest and profit if they are wise in their time.

The chapter headings show the plan of the first part of the book: Seaside Plant Societies. Inland Marshes, Deserts in the Rain, Christmas Tree Land, etc. The second part of the book is given over to a discussion of the plants themselves and ways to tell them. If the first part of the book gives one the clues to cultivation, the second part spreads before us a host of plants to pique our garden desires. There are many illustrations,

most of which suggest the habit of the plant rather than present an intimate portrait.

The Fragrant Path. By Louise Beebe Wilder. The Macmillan Company, New York, 1932. 407 pages. Frontispiece. \$3.00.

The discussions of fragrance, perfumes, and scents are so often brought to a sudden standstill by lack of a vocabulary, that one turns to this encyclopedia with particular gratitude. Like all other books by Mrs. Wilder, it is written in a pleasant style, that is as poetic and as sweetly spiced with allusion and quotation as her subject.

There is no point in recounting the table of contents. It is enough to say that after a preliminary philosophical chapter, the writer takes perfumes through the calendar, fortifies herself

by ten special chapters in which particular plants are treated and adds another hundred pages of miscellaneous data that will not go elsewhere.

If one wanted to be cantankerous, it would be only because Mrs. Wilder has not increased our vocabulary by coining a whole set of words that should arbitrarily mean certain things henceforth.

The Plant World in Florida. By Henry Nehrling. Collected and Edited by Alfred and Elizabeth Kay. The Macmillan Company, New York, 1933. 304 pages. Illustrated. \$3.50.

In all parts of the country there are to be found individuals whose lively curiosity toward the plants they can grow exceeds all their other horticultural interests. They are not always as industrious or as careful as Doctor Nehrling seems to have been in recording their observations. Too often it happens that their sum of knowledge is totally dissipated at the end of their life and their collections of plants divided in all directions.

It is a matter of congratulation that the Kays have brought into permanent form the records of Doctor Nehrling's experiences and they, the Palm Beach Garden Club, and all others who have helped in making this book have rendered a permanent service to all who will garden in Central and Southern Florida. For the northern gardener it must remain a winter pleasure.

Gardening in the Southwest. Edited by Mrs. Gross R. Scruggs. Southwest Press, Dallas, Texas, 1932. 230 pages. Illustrated. \$2.50.

Mrs. Scruggs, who has long been known in the Garden Club movement, has assembled here, with the aid of

many interested persons, to whom due acknowledgments are made, a mass of data that should be of the greatest value to gardeners within her area, an area which cannot be properly served by books and articles written elsewhere. It is presumptuous for any one living far from Texas to criticise the contents. It is safe to remark that the contents cover most of the subjects that come within the range of the amateur's experience and touch upon most of the current fancies. As an outsider, the reviewer could wish for fuller chapters on the native Texas flora and less of such threadbare material as zinnias!

The Lily Year Book. Published by the Royal Horticultural Society, London, England, 1933. 6s.

Articles and books on lilies have been few in comparison to the realms written on the iris, dahlia, gladiolus, or rose, and, therefore, this Year Book is welcome in this year of deepest depression. It is admirable the way the British are going ahead with their gardening and sending out expeditions to gather plants and publishing a Year Book.

In reading the book, being an American, one is a little disappointed to see how the fine work of Doctor Guterman on mosaic and other lily diseases has been ignored, as well as Doctor Stout's work on the sterility of the lilies and the behavior of lily seeds.

In Great Britain, perhaps due to climatic conditions, there has not been the same success in raising lilies from seed which we have had in the United States, nor in general do the Asiatic lilies seem to fare as well in the British Isles as they do for us. We have not stressed soil conditions here nor found it an important factor in growing the lilies, perhaps because on the whole our

soil is neutral. We have felt that the one deterrent against healthy bulbs are the diseases which the British pass over very lightly, but they lay great stress on the quality and composition of the soil and constantly mention its consistency, whether of clay, peat, sand, or muck, and whether it is acid or sweet.

The most dramatic article in the pamphlet is the one by the Abbé Souillet of Milly, France, in which he tells how he removed scales from the plants of *candidum* without disturbing them, in order to convert the perennial bulb into an annual and so stimulate them to set seed. In this way he was able to secure some unusual crosses which ought to be very striking. The article on hybrid lilies is excellent as are the ones on Lilies in Irish Gardens, The Place of Lilies in the Garden, and the one on *Lilium Monadelphum* and its Allies. Besides there is an excellent index of illustrations of the species *Lilium* to be found in the Library of the Royal Horticultural Society which will be helpful to students of the subject.

In addition to articles on lilies there are a few on the Fritillarias and a list of the species *Nomocharis*.

The Year Book is interesting but perhaps could have been better looking, for the pamphlet "*Unsere Gartenlilien*" by Alexander Steffen, published by Gartenschönheit in 1929, has many exquisite photographs and is far handsomer.

After reading this monograph, I am overcome with a sense of indignation that we Americans have not produced Year Books of this kind, based on the

experience of American gardeners. Perhaps the reason is that we are not adult enough as gardeners. There is so much excellent material on the growing of lilies in America from the work being carried on in the Northwest to Miss Isabella Preston's excellent work in Ottawa and the work at Cornell and the Boyce Thompson Institute of Plant Research. Perhaps this publication will act as a spur to the sluggish gardeners here and cause them to get together and produce Year Books on different plants in the near future.

HELEN M. FOX.

Gardening with Herbs for Flavor and Fragrance. By Helen M. Fox. The Macmillan Company, New York, 1933. 334 pages, illustrated, \$3.50.

Of Mrs. Fox's several garden books, this seems to the present reviewer, the most carefully conceived and carried out. After serious and extensive study, the field was definitely limited to the presentation of information about sixty herbs and was rigorously kept to a discussion of their culture and uses, simply told, with enough of historical allusion and garden comment to make the plants described seem more than mere candidates for our borders and our pantries. There is a deference to the style and makeup of old herbals, in the title page and the charming drawings of Miss Mansfield, in the amusing dedications and the format of the book itself that add greatly to its charms. It should go far to call proper attention to this neglected group of plants.

The Gardener's Pocketbook

Glaucothea (Erythea) armata O. F. Cook. (See page 161.)

In the north central part of Lower California, just below the Thirtieth Parallel, a few large canyons that cut through the dry, white granite mountains of the desert, carry several botanical surprises. Among these is the noble *Glaucothea (Erythea) armata*, a blue fan palm.

In the canyon of Catavincita, this species is found growing in the sandy bottom, along the stream bed. Some of the plants reach forty feet, which is approximately the height of the green leaved Washingtonias found in a few canyons of the upper California desert.

The lower portion of the trunk of one of these patriarchs is bare as the oldest leaves drop off of their own accord. The upper portion of the trunk is clothed with a thick skirt of old leaves. Above all is the magnificent head of blue fan shaped leaves.

Each leaf is borne on a narrow, elongated petiole that is deeply channeled and lined on each edge with a row of strong, hooked teeth. Each petiole begins its existence in an upright position and gradually droops as new ones supersede it, until it reaches old age and hangs down. The outer edge of the leaves is lacerated and their margins bear fibrous filaments.

In July the plants present the glorious spectacle of flowers and ripe fruits at the same time. The innumerable small, creamy white flowers are borne on spadices fifteen or more feet long, which reach out and droop down beyond the leaves. The fruits take a year to ripen. They hang in long compact clusters, each fruit of the size and shape of an

olive, which they resemble until they ripen and turn a golden brown. The thin flesh covering the large seed is sweet and edible, yet not enjoyable unless it is a long time since the last meal.

The Mexicans call this the "Ash Palm," probably on account of the color of the leaves. They do not make much use of it as the Washingtonias grow in the same district, providing leaves for thatch, timber for building, leaf stems for fencing, fiber for saddle pads and mattresses as well as fruit to vary their meager ration.

In the warmer portions of California and the south, the *Glaucothea armata* does well in the open garden. In colder sections it can only be grown as a greenhouse plant. While this palm is truly a desert denizen, it will use much water when in well drained soil as is indicated by its habit of only growing on the margins of the larger stream beds, where there is always underground water. In rate of growth it is much slower than the Washingtonias.

HOWARD E. GATES.

Anaheim, Calif.

Pentstemon Crandalli. A. Nels. (See page 162.)

One of the Caespitosa Group; is found in dry, sunny, open places between the Ranpart Range and the Continental Divide in Colorado.

Leaves are linear and glabrous. Flowers clear intense turquoise on 3 to 4 inch stems; good habit, profuse bloomer, happy anywhere except in rich, moist soil in shade.

These low spreading pentstemons deserve to be more generally known. Their neatness of habit is unexpected



H. L. Standley

Pentstemon Crandalli

[See page 161]

since we are so accustomed to the gangling inclination to untidiness of some of the tall species.

MRS. G. R. MARRIAGE.

Colorado Springs, Colo.

Aquilegia saximontana Rydb. (See page 164.)

From timberline to about 13,500 feet high on Pike's Peak, *Aquilegia saximontana* (syn. *brevistyla*) is to be found tucked in the lee of huge granite boulders. For some reason—possibly because chipmunks gobble up the seed the minute it ripens—it is unevenly and sparsely distributed.

It is a gem for the rock garden. The miniature flowers on 4 to 5 inch stems, blue perianth, white corolla, distinct yellow stamens and rather stubby spurs are fascinating. The small

twice ternate leaves make attractive tufts and remain good all summer. Without cutting back it retains its fresh greenness—better behaviour than any of the taller varieties here. The ultimate height is not more than 6 inches—the average 4 inches.

In our rock garden at 6,000 feet it bloomed profusely in April. Then from mid-May to date (Sept. 19) it has not been without a few stray blooms.

It seems to be adaptable to various climates if given a diet of grit and leaf mold.

MRS. G. R. MARRIAGE.

Colorado Springs, Colo.

Lilium, Backhouse Hybrids. (See page 165.)

Mrs. R. O. Backhouse who contributed in her time to the beauty of



Howard E. Gates

Blue Fan Palm

[See page 161]



H. L. Standley

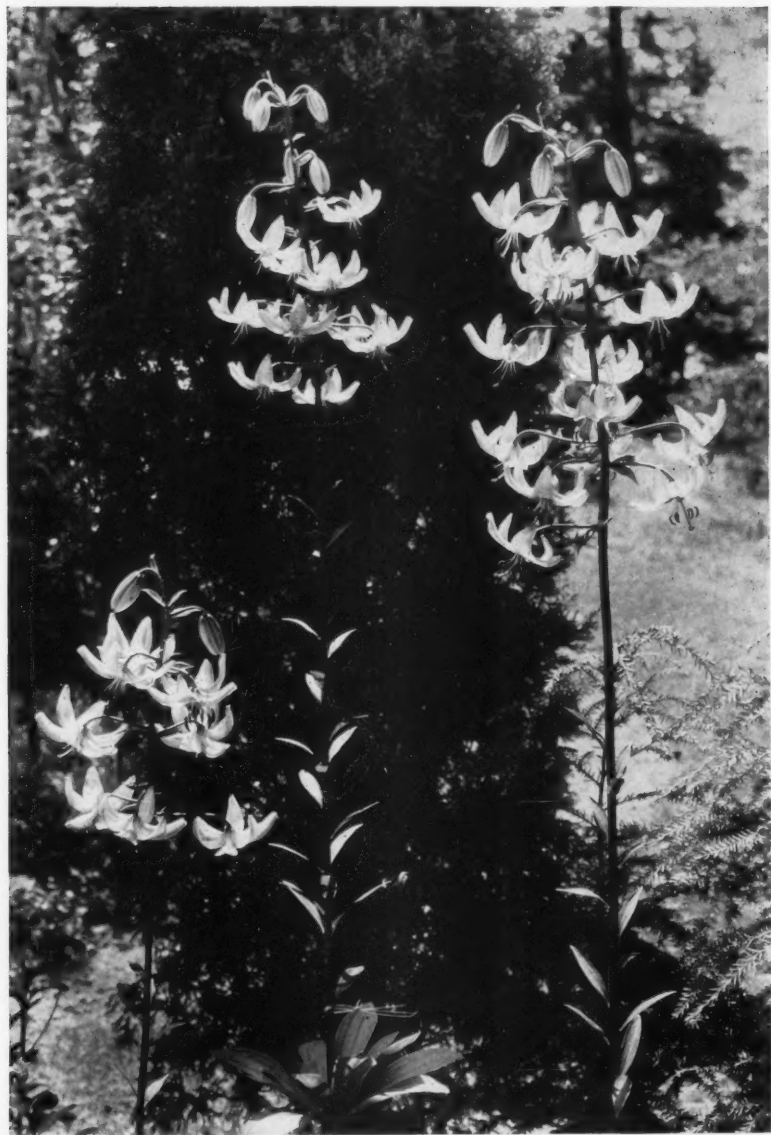
Aquilegia saximontana

[See page 162]

several garden plants, perhaps especially narcissus in which she created many varieties of startlingly brilliant coloring, had a hand also in the production of lily hybrids and developed a group of hybrids between the Asiatic orange lily, *Lilium Hansonii* (seed) and the European *Lilium martagon*. From the mating of these two members of the Martagon Section, with their somewhat similar habits of growth and general aspect, but with flowers of clear orange yellow in the one case and deep possibly dull crimson purple in the other, has come a strain of vigorous hybrids many of

which have been selected and propagated under horticultural names such as, Mrs. R. O. Backhouse, Golden Orb, Sceptre, Sutton Court, Brocade.

As a group they form plants that grow from three to eight feet high with handsome whorls of leaves along the lower parts of their stems, the usual individual leaves of the upper parts and terminal heads of nodding flowers that increase in number as the bulbs develop size and vigor. The illustration shows the style and shape of the flowers perfectly but it cannot suggest the colorings which are various, essentially yellow in several hues



Van Altena

Backhouse Hybrid Lilies

[See page 162]

overlaid with tints of peach, apricot and pale lilac, intensified by dottings and specklings of deeper color. As might be expected some of these colorations carry better in the garden color scheme than others, but whatever the distant effect may be, the elegant carriage of the plant, and the beauty of the color nearby are quite enough to assure the long use of these hardy lilies.

HELEN M. FOX.

Peekskill, N. Y.

Ruellia ciliosa Pursh. (See page 167.)

With most people who know it long enough, this is a wild flower that discredits the old saw about first impressions. The small plant with rusty-hairy leaves of nondescript appearance is far from impressive and the flowers, though pretty, are fleeting and borne few at a time. As a rule it is discarded after the first season, but also as a rule, the discarder is in the market for more the next season.

In calcareous soil, clay gravel or sand, with enough water, it may reach a foot in height, usually less and although its sky-blue to medium violet trumpets are borne by ones and twos, sometimes skipping a day or two and though they wither within twelve hours after opening, they may be seen nearly every morning from mid-spring until mid-fall, not infrequently lingering until hard freezes, blooming on mild days even after the leaves have fallen.

Though fibrous rooted and showing a preference for moist spots, it is really an arid land plant and can endure almost any amount of dry weather if there is rain at some time during the year. Naturally being devoid of fleshy roots, it does not bloom during prolonged droughts.

There may be one or two or up to five stems from the crown, each sim-

ple and the flowers borne in the axils of the leaves resemble those of an old-fashioned petunia in form and are usually of that violet color that is amusingly called "sky-blue" though there are a few of deeper color and an occasional albino. It is not an early flower, the downy shoots seldom making their appearance until settled warm weather comes, but once started it gets down to business in a very short time and keeps it up.

NOTE. The illustration is from the garden of Mr. Fairman Furness, Media, Penna.

W. A. BRIDWELL.

Forestburg, Texas.

Ruellia formosa Andr.

This is an exceedingly pretty late winter or very early spring flowering greenhouse perennial with light scarlet flowers about one and one-half inches long. It has pale green opposite ovate leaves that are quite hairy and form a fine foil for the very brilliant blossoms. In Nicholson's Dictionary of Gardening it is said to have been introduced from Brazil in 1808.

My plants came from about halfway up Blue Mountain, Jamaica, where I found it in 1929. It was growing in a large, many-stemmed clump, about two feet across, on a sunny bank in dry soil and formed a strikingly handsome object. It was the only plant that I saw of this species and I spent a whole day going up the mountain and another coming down.

It has made itself quite rapidly at home in my little greenhouse and shown me its lovely and conspicuous flowers in 1930, again in 1931 and 1932. *Ruellia formosa* roots very easily from cuttings taken at almost any time and nice plants are rapidly raised from seed. In fact, each spring I have found numerous little self-



Shewell Ellis

Ruellia ciliosa

[See page 166]

sown seedlings sometimes in pots of other plants and also in the bare pebble-covered bench.

It comes into bloom before the usual spring flowering plants and it is easy to grow and not at all particular as to soil. The extremely pretty and quite unusual looking flowers continue their display for a long time and make the plant even more worth growing.

MRS. J. NORMAN HENRY.

Gladwyne, Penna.

Campanula rapunculoides L. (See page 167.)

This bluebell, a European species, is often listed as a native of the United States because it has escaped from so many of the old gardens and has become so thoroughly established in the wild areas of the eastern states that it seems a common plant to find when rambling through the woods.

This campanula can become a most persistent weed if used in good soil or exposure in the perennial border, by the spread of the stolon-like suckers that are forever forming about the parsnip-like roots which no amount of digging or weeding will discourage. I have been trying for five years to eliminate some from one section of my perennial border that has been remade twice since I planted about half a dozen plants, but every spring I find hundreds of small plants that would soon choke out some of my more desirable perennials.

In spite of this, I have found a place to use *Campanula rapunculoides* to real advantage, that is, in extreme shade where almost no sun penetrates on account of buildings or evergreen trees. Here the bluish-purple flowers appear late in May and continue until the first of July on stalks one to three feet tall depending on the moisture

and fertility of the soil, and fill a place that has been a trial for all other perennials. In such a location it may be allowed to spread to its heart's content in as much as it will not compete with deciduous shrubs or evergreens. If it needs other claims for your attention, and if you are interested in utilitarian details, it is said that this plant may be eaten and that in Europe its roots and shoots are used in salads.

I. N. ANDERSON.

Ballston, Va.

Hymenocallis occidentalis Kunth.
(See page 170.)

Of the seven species of "Spider Lily" in the United States, there is only one that is hardy in the north—*Hymenocallis occidentalis*. This lily belongs to the Amaryllis Family and has a large coated bulb, basal strap-like leaves and scapes one and a half feet tall bearing umbels of flowers. The plants are very local, like open woodland on exposed ridges, are not choicy as to soil and when left undisturbed throw several spikes to each bulb. They propagate sparingly by bulblets and seed.

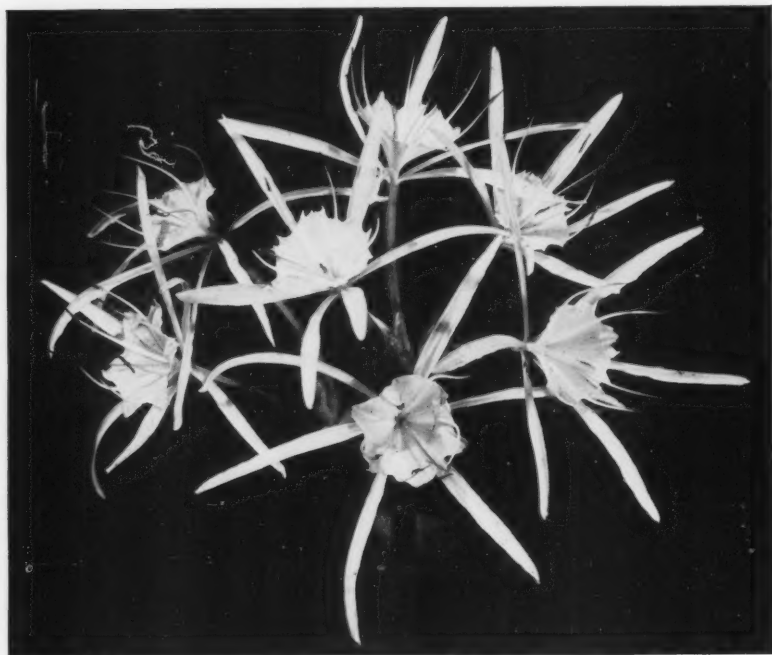
The seed are large green fleshy balls. They should be planted as soon as mature and require about a year to germinate. Just how long it takes them to produce blooming-sized bulbs I cannot say as the bulbs I have from seed are only one year old and very small. I have been unable to get this information from the several sources I have tried, but one man who has had quite a bit of experience with them thinks it will require about seven years and I feel that he is not far wrong. The beauty of these unusual spidery blossoms of waxy white with deep yellow anthers is accentuated by a glorious fragrance which is most



L. A. Guernsey

Campanula rapunculoides

[See page 168]



George Masa

[See page 168]

Hymenocallis

unusual and far-reaching but not heavy or too sickly sweet.

ANNIE LEE R. CLEMENT.

Asheville, N. C.

Prunus serrulata Lindl. Variety Amanogawa. Oriental Cherry. (See page 171.)

The only truly fastigate Japanese cherry of which we have record is the subject of this note, which may be said without exaggeration to be as stiffly upright in habit as the Lombardy poplar. In this respect it is unique, and is easily distinguished at any time of the year from all other varieties of the oriental cherries.

Although the tree generally is not

more than 18 feet high, its slender aspect, of course, makes it appear taller than a spreading tree of the same height. The bark is dark gray and smooth, and the brownish red young foliage appears about the time the flowers are fully opened. The slender ovoid buds are deep pink, opening into semi-double flowers up to $1\frac{3}{4}$ inches across, light pink with deeper pink margins. These are in upright clusters of two to four, commonly three, with relatively long pedicels that stand upright in spite of their length.

The characteristically fastigate habit of Amanogawa makes it particularly suitable for more formal landscapes, and it is not unattractive

E. L.



E. L. Crandall

Oriental Cherry, Amanogawa

[See page 170]

as a specimen tree for the lawn. It has also been suggested that it could well be planted in a wide perennial border, say at intervals of twenty feet, to serve as a repeat accent as standard roses sometimes do. If such planting were used for double borders with a wide green path between and high evergreen hedges at their backs, the spring effect would be exquisite. When seen in full bloom against such a dark background the appropriateness of the Japanese name, which means "milky way," is readily appreciated. There is also a white-flowered form, known as Tanabata, reported from Japan, but it has not yet appeared in the United States.

In the spring of 1906, Doctor David Fairchild introduced trees of this variety from Japan, and some of these are still living in North Chevy Chase, Maryland. These are probably the oldest trees in the United States. A few nurseries in the East and one or two on the Pacific Coast offer Amanogawa, but it is still rarely planted.

In common with the greater part of the oriental cherries, this variety is most satisfactorily propagated asexually, but it is interesting to note that Miyoshi, in *Die Japanischen Bergkirschen*, Tokyo, 1916, on p. 150, states that seedlings of Amanogawa differ very little from the parent tree, inheriting the fastigate habit perfectly. Seedlings of this variety at the United States Plant Field Station at Glenn Dale, Maryland, all show the fastigate habit to a certain extent, some very strongly.

PAUL RUSSELL.

Kalmiopsis Leachiana Rehd. (See page 173.)

A new plant from the Pacific Northwest, *Kalmiopsis Leachiana*, has

begun to interest gardeners who are on the lookout for the new and unusual in rock garden material. It comes from a limited area in the Coast Range in Southern Oregon, a region peculiarly rich in botanical treasure.

Related to *Rhododendron* and *Kalmia* and resembling each in some respects, it was at first described by Dr. L. F. Henderson, of the University of Oregon, as *Rhododendron Leachianum*, but on account of certain botanical differences between this plant and *Rhododendron*, was later re-classified by Dr. Alfred Rehder, who gives it the generic name of *Kalmiopsis*. The specific name is in honor of its discoverer, Mrs. John R. Leach, of Portland, Oregon, whose botanizing trips in the Oregon wilderness have resulted in a number of interesting discoveries, including two new genera and a dozen or more species and varieties, some of which still await classification.

Kalmiopsis Leachiana is a dwarf evergreen shrub five to eight inches high, with rose-colored flowers which in the natural situation, bloom in May, though it may prove to be an earlier bloomer in lowland gardens. The flowers resemble those of *Kalmia*, rather than *Rhododendron*, but are more campanulate than *Kalmia* flowers. *Kalmia polifolia*, a dwarf western shrub which has been tried in rock gardens with only moderate success, so far as I have been able to observe, does best in soil containing a good deal of peat, and abundantly watered below. It must have plenty of light, but not a dry situation; if placed in shade, it goes leggy and refuses to bloom. This is to be expected from observing its natural situation, swampy places at high altitudes, where it is found in the company of sedges, gentians, louseworts and other wet-meadow alpine.



Kalmiopsis Leachiana

[See page 172]



Margaret DeM. Brown

[See page 176]

Borage

While cultural information about this newer plant, *Kalmiopsis*, is lacking as yet, it seems reasonable to expect that it will be fairly adaptable to rock garden conditions, possibly more so than the *Kalmia*, since Mrs. Leach reports finding it in two quite different situations. The first of these is in the open pine and fir woods, in half shade or sun, where it grows in rich vegetable soil, with grasses and herbaceous plants of the region, such as *Lupinus columbianus* and *Veratrum viride*, the latter usually found in moist spots. Trees of the region include several pines and oaks, and the plant may be expected to thrive in acid soil.

At an altitude of approximately

5,000 feet, the little shrub is found in a somewhat dwarfer form, as a saxatile plant. It flourishes in narrow crevices in the ledges of serpentine, in a soil which is largely broken rock, with some leaf mold. The plant is equally floriferous in both situations, but is reported to be taller and more woody when growing in shade.

Seeds collected by Mrs. Leach have been given to the Arnold Arboretum and to several botanical gardens in the United States and Europe, and a supply of plants may be expected from these after a time. I know of no one who is propagating the plant as yet, from cuttings or divisions. The only collected specimens I have seen were not yet fully enough estab-



Michael Carron

Iris histrioides major

[See page 176]

lished after transplanting, to show conclusively what may be expected of this new rock shrub.

DREW SHERRARD.

Oswego, Ore.

Borago officinalis L. (See page 174.)

Among the many herbs, borago is an annual that was much used for flavoring. As one might easily guess from the illustration it belongs to the same family as anchusa and cynoglossum, for the curling inflorescence and the soft prickly hairs of the stems and leaves are well known.

Although it is a rather coarse plant it is not without its special beauties, especially those of the flowers which are like five-pointed stars with petals of forget-me-not blue and in their center white stamens forming a pretty pattern. There is a white variety that is not so showy and a perennial species with trailing stems and paler blue flowers (*Borago laxiflora*). The annual borago grows about twelve inches high and if it is wanted all summer should be given at least three sowings with intervals of about two weeks between.

In olden times, the young leaves and flowers, which have a cucumber flavor, were used to flavor ales, beers and other old time drinks. Now they are used, especially the leaves which lose their bristles in cooking, in place of

spinach and form a variation from that other familiar herb. The flower corollas slipped from their calyces may be floated singly or in little fleets in finger bowls to add variety to the flowers so used.

HELEN M. FOX.

Peekskill, N. Y.

Iris histrioides major Hort. (See page 175.)

This bulbous iris from Asia Minor is one of the flowers always listed among the earliest bloom in British gardens. Transplanted to this country, it maintains its earliest flowering and comes up to a more uncertain climate with mild February sunlight, often immediately followed by bitter winds and chilling rain. Nevertheless, the sight of its deep blue lavender flowers, mottled with white and touched with yellow on the fall, is so gay and brave a one that they deserve a temporary shelter to keep them from harm.

My bulbs are planted in a well drained loam in which generous amounts of sand and leaf compost have been added and show every indication of liking it, even to slight increase. They flower regularly in February, about ten days before Cantab and three weeks before the typical blue purple *reticulata*.

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TUESDAY, WEDNESDAY AND THURSDAY
JULY 11th, 12th & 13th, 1933

The Society has been fortunate enough to secure lectures from many of the foremost authorities on Lilies, both in this country and abroad, and the programme of the Conference has been arranged so as to allow time for discussion after each lecture.

All who are interested in Lilies or *Nomocharis* are cordially invited to attend and the Council hopes that the Conference and Exhibition will do much to extend the cultivation of these plants by increasing the common stock of knowledge regarding them.

Those who intend to be present are requested to notify the Secretary by July 1st so that adequate arrangements may be made.

The Secretary, Royal Horticultural Society, Vincent Square, London, S.W. 1.

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The American Horticultural Society

INVITES to membership all persons who are interested in the development of a great national society that shall serve as an ever growing center for the dissemination of the common knowledge of the members. There is no requirement for membership other than this and no reward beyond a share in the development of the organization.

For its members the society publishes *THE NATIONAL HORTICULTURAL MAGAZINE*, at the present time a quarterly of increasing importance among the horticultural publications of the day and destined to fill an even larger role as the society grows. It is published during the months of January, April, July and October and is written by and for members. Under the present organization of the society with special committees appointed for the furthering of special plant projects the members will receive advance material on narcissus, tulips, lilies, rock garden plants, conifers, nuts, and rhododendrons. Membership in the society, therefore, brings one the advantages of memberships in many societies. In addition to these special projects, the usual garden subjects are covered and particular attention is paid to new or little known plants that are not commonly described elsewhere.

The American Horticultural Society invites not only personal memberships but affiliations with horticultural societies and clubs. To such it offers some special inducements in memberships. Memberships are by the calendar year.

The Annual Meeting of the Society is held in Washington, D. C., the second Tuesday in February and members are invited to attend the special lectures that are given at that time. These are announced to the membership at the time of balloting.

The annual dues are three dollars the year, payable in advance; life membership is one hundred dollars; inquiry as to affiliation should be addressed to the Secretary, Mr. C. C. Thomas, 211 Spruce Street, Takoma Park, D. C.



